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The Japanese Food and Feed Grain Economy

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THE JAPANESE FOOD AND FEED GRAIN ECONOMY[1]

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Introduction

INTRODUCTION AND PROBLEM STATEMENT

Agricultural exports play a vitally important role in the economic well-being of the United States. Three of the primary reasons for the importance of agricultural exports to U. S. farmers, as well as other Americans, are the contributions to: 1) the maintenance or expansion of farm incomes, 2) improvement of the balance of payments, and 3) the support of U. S. political strategy.

The value of agricultural exports to the U. S. economy has been statistically evident in recent years. From 1972 to 1977, the agricultural trade balance (TB) averaged + $9.75 billion per year while during the same period the non-agricultural TB averaged — $16.4 billion per year. In 1977 alone, the non-agricultural TB was in deficit $40.2 billion while the agricultural TB was a $10.2 billion surplus. The importance to the nation's economy of a continuing high level of agricultural exports is intensified every month as the U. S. continues to accumulate record trade deficits.

Japan is the single largest customer for American agricultural products. Since 1975 Japan has purchased 16% of all U. S. agricultural exports. Feed grains, soybeans, and wheat accounted for more than 50% of Japan's agricultural imports from the U. S. The importance of Japanese imports of U. S. agricultural products is further emphasized by the fact that from 1975 to 1977 the U. S. TB with Japan alone was in deficit by an average $5 billion per year. In light of these statistics which document the importance of U. S. agricultural exports to Japan and, in particular the feed grain, soybean, and wheat exports, it is evident that it is to the advantage of the U. S. to be as knowledgeable as possible concerning the Japanese feed grain, soybean, and wheat import markets as well as the entire Japanese agricultural and food economy.

Very little is written in English about the Japanese agricultural system.[3] This is especially true when compared to the volume of literature available from other developed nations. The difficulty this presents to persons in industry, government, and academia interested in Japanese agriculture is further aggravated by the fact that there is considerable evidence that the Japanese agricultural system and consumption of agricultural products are not duplicates of Western countries. Therefore, assumptions made about Japan's production and consumption of feed grains, soybeans, and wheat in economic modeling based upon the experiences of other developed countries are not likely to be appropriate.

Besides the differences in Japan's consumption patterns, there is reason to believe that the consumer, via consumer purchasing power, is not as sovereign as might be expected in Western economies. This is because of institutional characteristics in the agricultural markets. These institutional characteristics involve government agricultural and trade policies as well as private institutional relationships in the food sector. There is little question whether or not these institutional characteristics affect the agricultural imports and imports of feed grains, soybeans, and wheat; the question is—how and to what degree. This question has been superficially discussed in numerous articles and publications but has never been thoroughly researched. The answer is of great potential importance to U. S. agricultural exporters.

Although there are concerns over the future of the U. S. market position for feed grains, soybeans, and wheat, there appear to be few empirical and/or descriptive investigations into this area. This is also true with information regarding the obvious perceptual, cultural, and informational gap concerning Japanese agriculture and imports of feed grains, soybeans, and wheat.

This research is concerned with the quantity of feed grains, soybeans, and wheat imported by Japan, and the role of the U. S. in these markets. U. S. dominance in the past has been unquestioned. However, since 1966 there has been considerable concern from the U. S. side over the future U. S. market position in the Japanese market (4, 13, 54, 55, 59).

The extent to which the U. S. can maintain its position in these markets, as well as improve its understanding of a mutually beneficial trading relationship with Japan, is dependent upon the U. S. acquiring a greater knowledge and better understanding of the

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[3]Major sources of information for this report were personal contacts and interviews with people in government, industry, and academia involved in the Japanese food economy. A list of people who were interviewed or who supplied information is provided in the Appendix.

Japanese agricultural system. This report is one step forward in accumulating the needed descriptive and empirical information from which a better understanding can be reached.

STATEMENT OF OBJECTIVES

The overall objective of this study is to investigate the Japanese feed grain, soybean, and wheat markets in order to describe these markets. This economic analysis of the Japanese feed grain, soybean, and wheat markets places particular emphasis upon identifying market aspects which are affecting and will continue to affect Japanese imports of these commodities and the U. S. market position.

The sub-objectives are:

- To identify and describe Japanese government policies and programs that affect feed grain, soybean, and wheat markets and the extent to which these markets are affected.
- To describe the operational decision-making process within the Japanese feed grain, soybean, and wheat-consuming industries with respect to the buying practices and non-price criteria used by these companies in selecting supply sources.

Introduction and Historical Overview of the Japanese Food and Agricultural System

In order to adequately understand Japan's present agricultural system, its programs and policies, it is necessary to understand some of the major events and phenomena that have shaped Japan's unique system of agriculture. Any system such as Japan's with diverse segments having different goals is difficult to analyze and describe. The Japanese food economy is particularly complex because of societal and political considerations (such as consumer food needs, farmer income levels, agricultural diversification, food source independence, etc.) that are quite different from those in the U. S. Description is even more difficult since the many different sectors of the food economy are interdependent. Therefore, in order to adequately explain the soybean, wheat, and feed grain markets, it is also necessary to explain the relevant aspects of other sectors of agriculture.

HISTORICAL OVERVIEW OF JAPANESE AGRICULTURE AND THE INCOME-ENERGY GAP

Since the time of the Sino-Japanese war, Japan has been a food importing country. As a result, the government endeavored to increase rice production in Korea and Taiwan. Just prior to and during World War I, the price of rice fluctuated wildly, a situation which culminated in the Rice Riots of 1919. The subsequent Rice Law, which gave the government the authority to purchase and resell rice as well as to stabilize the price by setting ceiling and floor prices, marked the beginning of significant government intervention in the food marketplace (50). From 1919 to just prior to World War II, the government continued to increase its authority and control over food products, primarily rice, in an effort to control food prices, stimulate production, and limit imports. These continue to be important goals of the Japanese food strategy today.

Japan's food problem since the mid and late 1950's has been a consistent two-dimensional food shortage that is distinctly different from the more dramatic and temporary food shortages immediately following World War II. The first problem was a nutritional one. Per capita food consumption in Japan from 1954 to 1960 was at a level below the Food and Agriculture Organization's (F.A.O.) nutritional reference standard for the country.[4]

The second problem was primarily one of economics and has come to be called the "income-energy gap"[5] (4). The income-energy gap is basically a gap between the consumption of food and the amount of food to which the Japanese are "entitled" on the basis of their relatively high level of income. Figure 1 demonstrates the idea behind the income-energy gap. During the period 1954 to 1962, Spanish and Japanese consumers had about the same level of personal income (an average of approximately $250/capita/year), yet the Spanish consumed about 2,670 calories/capita/day compared to the Japanese consumption of 2,250 calories during this period. Measured against Spanish consumption, the income-energy gap would be 420 calories; measured against Greek consumption, it would be 650 calories. Certainly there is a large difference between Western and Japanese consumption levels.

It is also important to realize that in spite of the relatively higher incomes, the income-energy gap cannot be attributed to a lack of staple and/or cereal

[4]The F.A.O.'s **"Third World Survey"** (65) set the short term daily food consumption target per person for Eastern Asia (including Japan) at 2,350 calories, balanced among food types. During the 1950's, Japan's food consumption was significantly below 2,350 calories. Presumably this was a sign of nutritional deficiencies for some segments of the population.

[5]A more descriptive term would be "income-food energy" to distinguish the term energy from its more common use in reference to coal, oil, etc.

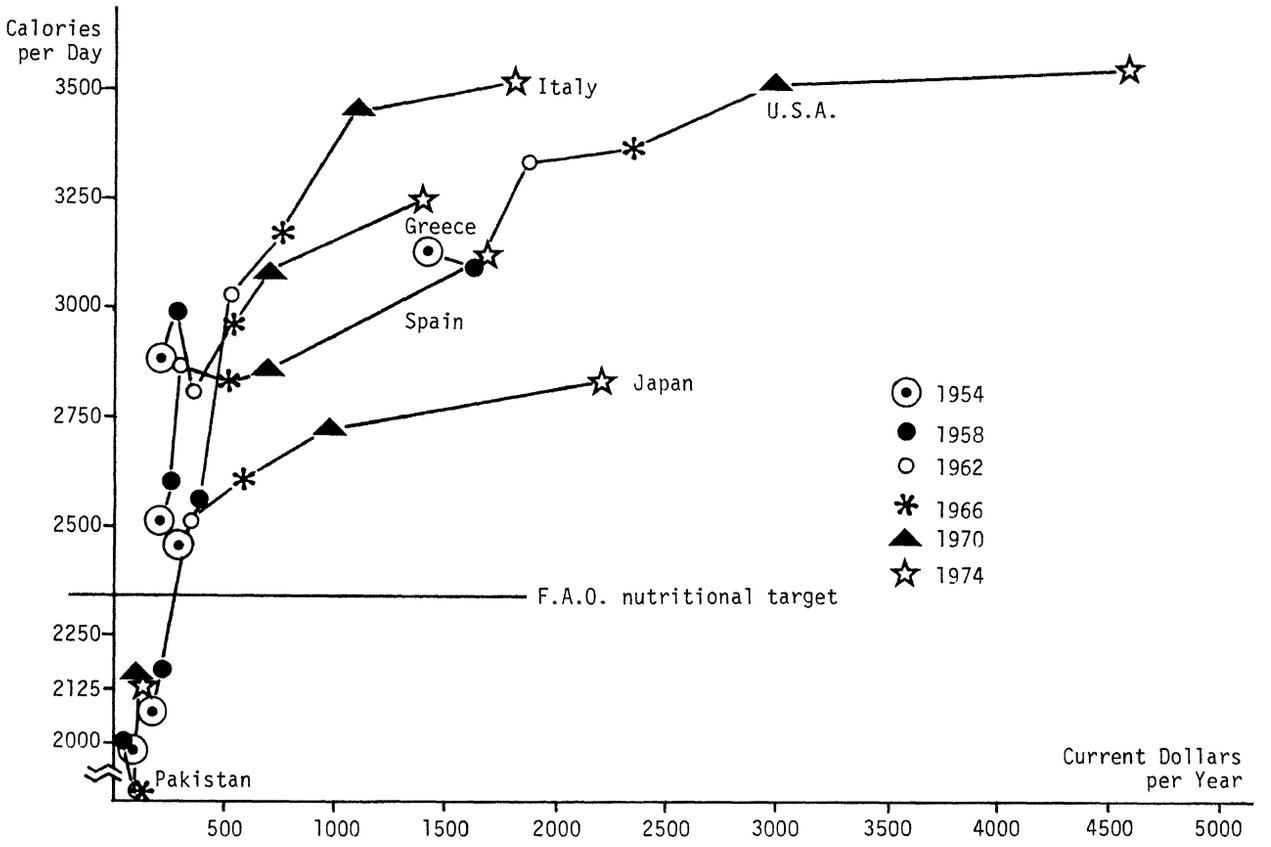

FIG. 1.—Total per capita food consumption and private per capita consumption in selected countries, 1954-1974.

foods since Japanese consumption of these foods matched and exceeded Western levels during this time (66). Rather, the gap is almost totally attributed to Japan's relatively low consumption of livestock products. This is illustrated in Table 1 where the grams of animal protein are separated from total protein per capita per day for selected countries. It has generally been noted that, although consumption of livestock products from country to country differs, the levels for consumption of livestock products in Western nations are generally comparable at the various levels of per capita income.

This problem of economics was more formidable and politically hazardous to the government than the nutritional deficiency which could be overcome in a few years. (According to the F.A.O. data, the nutritional deficiency was overcome in 1960 (66).) The economic problem, however, threatened to deteriorate because of the constant strain in Japan between increasing food demand (represented by growing incomes) and short domestic food supplies. If Japan allowed per capita food supplies to stagnate or decline in the face of rapidly increasing per capita income, food prices would skyrocket, creating political and economic problems, especially among groups whose incomes rose less than the average.

While Japan's commerce and manufacturing sectors were improving their economic image in a dynamic fashion, Japan's agriculture remained rather stagnant. The productivity of agricultural labor in Japan was lower than that of any other developed country (4, 63). This problem was compounded by a lack of cropland and an extremely small scale of production (the average size farm in Japan is 2.97 acres), which limited the economic feasibility of greatly increased employment of capital and advanced technologies.

It became obvious to Japan's leaders in the late 1950's that they would have to develop new agricultural sectors if the income-energy gap was to be closed with the least possible disruption to rural Japan. However, the question of whether or not to close the gap came down to one of whether or not to increase agricultural imports in one form or another.

The Japanese historically have been very much opposed to agricultural imports for two primary reasons: 1) imports increase Japanese dependency on foreign food supplies, and 2) increased imports of

food reduced foreign currency available for the purchase of imports needed for economic growth—vital raw materials, advanced technology, and capital. The second reason was especially important to Japan in the 1950's and 1960's.

In the late 1950's, there were a number of agricultural issues that resulted in a great debate. Some of the issues have already been discussed. However, one additional problem should be mentioned. The agricultural work force in 1961 had an average income equivalent to 25% of the average income of a worker employed in the manufacturing sector. This is a particularly critical differential in light of the low average income of a worker in the manufacturing sector in 1961. The problem the government faced was: what policy would economically increase food supplies, increase the farmers' income, and do this with minimal disruption to the agricultural society?

The agricultural debate of the late 1950's culminated in several policy decisions which set the stage for a Japanese food strategy. The major outcomes of the debate that concern the feed grain, wheat, and soybean markets are:

TABLE 1.—Total Private per Capita Consumption and per Capita Food Consumption Statistics for Selected Countries, 1954-1974.

Year of Private Consumption Year of Food Supply	1954 1954-1956	1958 1957-1959	1962 1961-1963	1966 1964-1966	1970 1969-1971	1974 1972-1974
Japan						
Private consumption per capita per year (current U. S. dollars)	163	214	345	567	982	2202
Calories per capita per day	2070	2170	2517	2601	2731	2832
Protein (grams) per capita per day	65.5	67.9	72.3	74.5	82.0	85.5
Animal protein (grams) per capita per day	13.3	13.9	24.4	26.9	36.2	40.1
Fat (grams) per capita per day	25.8	30.2	37.9	46.1	60.9	70.2
Greece						
Private consumption per capita per year (current U. S. dollars)	219	295	372	543	729	1422
Calories per capita per day	2880	2990	2812	2959	3072	3242
Protein (grams) per capita per day	90.7	95.8	84.7	90.8	97.2	101.2
Animal protein (grams) per capita per day	24.1	27.4	29.2	34.0	41.6	44.7
Fat (grams) per capita per day	82.2	85.9	89.3	96.2	107.6	116.2
Pakistan						
Private consumption per capita per year (current U. S. dollars)	55	60	68	86	114	101
Calories per capita per day	1990	1980	1829	1867	2147	2128
Protein (grams) per capita per day	46.6	46.0	52.1	51.9	59.0	57.2
Animal protein (grams) per capita per day	8.1	7.3	12.5	12.7	12.7	12.7
Fat (grams) per capita per day	24.0	22.0	30.0	30.0	32.3	33.3
Italy						
Private consumption per capita per year (current U. S. dollars)	314.5	407	552	788	1115	1825
Calories per capita per day	2470	2570	3027	3163	3460	3519
Protein (grams) per capita per day	72.7	76.4	83.1	88.5	96.0	98.1
Animal protein (grams) per capita per day	23.6	26.6	29.2	33.6	39.5	42.8
Fat (grams) per capita per day	62.0	70.1	87.8	94.2	116.8	122.3
U.S.A.						
Private consumption per capita per year (current U. S. dollars)	1451	1659	1904	2372	3011	4585
Calories per capita per day	3140	3100	3334	3367	3511	3535
Protein (grams) per capita per day	92.2	91.9	101.2	102.6	104.7	104.6
Animal protein (grams) per capita per day	64.8	64.9	68.0	70.1	72.2	71.8
Fat (grams) per capita per day	143.6	142.0	153.1	156.9	167.0	167.8
Spain						
Private consumption per capita per year (current U. S. dollars)	212	258	299	521	679	1705
Calories per capita per day	2520	2590	2873	2833	2857	3178
Protein (grams) per capita per day	70.2	71.1	81.8	82.3	83.5	91.1
Animal protein (grams) per capita per day	19.3	20.1	28.4	33.7	40.5	44.9
Fat (grams) per capita per day	74.0	78.2	86.2	90.8	99.7	113.7

Sources: (20, 66).

- The passage of the Agricultural Basic Law in 1961 upon which Japan's present agricultural policy is based. This legislation was a charter acknowledging that Japanese agriculture must be an industry as well as a way of life. A number of important principles put forth in this basic law were: 1) productivity should be increased through selective expansion emphasizing those agricultural products with high income elasticities, 2) the price of farm products should be stabilized, 3) farm incomes should be increased to adequate levels, and 4) the agricultural structure should be improved.

- Import quotas on soybeans were removed in 1961.

- The Livestock Products Price Stabilization Law was enacted in 1961 in order to prevent excessive price fluctuations and also to boost production of livestock products.

The Japanese government's major objectives in its new food strategy (particularly as spelled out in the Basic Law of 1961) have been interpreted somewhat differently from outside Japan than from within. It is agreed that two of the major goals were to increase per capita supply in order to reduce nutritional deficiencies and concurrently satisfy demand, and to increase production of agricultural products of high income elasticities (livestock products, fruits, and vegetables) faster than production of products with low income elasticities (Table 2) (4, 50, 51, 63). The difference is that outside observers such as Barse (4) infer that these two goals are the primary goals of the government, while Japanese analysts such as Ogura and Tsuchiya (14, 50, 51, 63) state unequivocally that the main goal of the Basic Law was to equalize the per capita income of agricultural and industrial workers. This difference, though perhaps seemingly minor, illustrates a need for greater understanding of Japanese agriculture from their perspective.

Regardless of the motives behind the Agricultural Basic Law, the result was a rather dramatic increase in domestic food production, especially livestock products. This increase in production has required the importation of more and more raw materials which in the case of the livestock industry consists primarily of feed grain and soybeans. Although the importation system will be explained in much greater detail later, it should be noted that Japanese imports of consumer products are kept low and well-controlled. Behind this protective trade shield, a new industry (livestock in this case) can establish itself as an efficient, or otherwise, operation.[6] The only imports in significant volume which can pass around this shield are strategic raw materials, technology, and capital.

TABLE 2.—Ministry of Agriculture, Forestry, and Fisheries Estimates of Income and Price Elasticities of Demand for Farm Products, Japan, 1970.

Commodity	Income Elasticity	Price Elasticity
Cereals		
Rice	—0.76	0.34
Bread	0.43	0.67
Barley	—3.39	3.23
Vegetables		
Eggplant	0.33	0.78
Cucumber	0.98	0.00
Tomato	0.60	0.32
Livestock Products		
Beef	1.06	1.83
Pork	2.40	1.91
Chicken	0.98	3.81
Milk	1.81	0.97
Fruits		
Oranges	1.51	0.97
Pears	1.06	0.14
Grapes	1.46	0.87

Source: (30).

It certainly appears that it is the purpose of the Japanese government to guarantee that the economic benefits from processing any raw material for domestic consumption go to the Japanese. This fact is not only evidenced in the livestock industry, but also in countless other industries. To accomplish this, the government uses tariffs, quotas, licensing, and other effective non-customs' barriers.

THE ROLE OF RICE

Rice is such an important and integral part of the entire Japanese agricultural system, both historically and today, that without some background knowledge of the role rice plays, it is difficult to understand many of the events in Japanese agriculture. Not only is rice the most important farm crop in Japan, it is also the single most important food to the consumer. In 1955 rice supplied 969 calories or 46% of the total calories consumed in Japan, which was 3.75 times as many calories as the next most important item, wheat. Although rice consumption has significantly declined, as illustrated in Table 3, in 1976 rice still supplied 829.7 or 34% of the total calo-

[6]Theoretically, an industry would establish itself as an efficient operation and then the protective trade barriers would be dropped and the companies would have to compete in the world markets. However, the Japanese livestock industry has had the time to become established and has failed to become an efficient operation, and the trade barriers still exist for that industry.

TABLE 3.—Rice Supply-Demand and Price Statistics, Japan, 1960-1977

Year	Area Planted	Production	Producer Price	Per Capita Consumption	Imports (+) or Surplus Disposal (—)
	1000 ha	1000 MT	1000 yen/MT	kg/person/yr	1000 MT
1960	3124	12539	139	114.9	+227
1961	3134	12138	147	117.4	+154
1962	3134	12762	162	118.3	+190
1963	3133	12529	176	117.3	+195
1964	3126	12362	199	115.8	+451
1965	3123	12181	218	111.7	+971
1966	3129	12526	238	105.8	+976
1967	3149	14257	260	103.4	+503
1968	3171	14223	275	100.4	+475
1969	3173	13797	275	97.1	—363
1970	2836	12528	276	95.1	—1079
1971	2626	10782	284	93.1	—2496
1972	2581	11766	298	91.5	—1866
1973	2568	12068	343	90.8	—1158
1974	2673	12177	454	89.7	—208
1975	2717	13080	519	88.1	+31*
1976	2740	11695	552	86.2	+16*
1977	2722	13018	574	83.4	+45*

*Imports since 1975 are largely imports of special types of rice because during 1975-1977, large stocks of rice were again built up although no rice was disposed of.
Source: (31).

ries consumed by the Japanese and 521 calories more than wheat.

For a longer period than most agricultural history books cover, rice has been the crop grown in Japan almost to the virtual exclusion of everything else. This is not unexpected or difficult to understand given the situation prior to World War II. It is difficult to understand why Japan, with the world's third largest economy, remains resolutely committed to rice production and consumption—especially in light of the government's stated desire to diversify agriculture.

In reference to the preceding section, it should be realized that the actions of the Japanese government are different from many of its public statements. As a result of the income-energy gap, the government had a choice of: 1) allowing the political and economic strains of an unbalanced and short food supply to continue to threaten the economy, 2) importing food, or 3) diversifying its agriculture. The government opted for the third alternative. However, at the time that it made its public commitment to diversification via the Agriculture Basic Law, it also committed itself to the income equalization of farm and urban workers. In 1960, strong political pressure from the farm sectors resulted in a government rice purchase-price determination formula called the Production Cost and Income Compensation Formula.

Under this formula, the producer price of rice rose very rapidly relative to the price of manufactured items. From 1960 to 1970, the price of manufactured goods in Japan increased 8%; but during the same time period, the purchase price of rice increased 99%. The government's commitment to rice production is further illustrated by the fact that in 1968 the deficiency from the rice support program was 463 billion yen ($1.3 billion) which amounted to 40% of the budget for the Ministry of Agriculture and Forestry and 5% of the national budget (3).

After the disposal of 7,200,000 metric tons (MT) of surplus rice in 1972 to 1974 at a cost of 1 trillion yen ($3.33 billion), the government adopted a rice production adjustment plan which requires farmers to take out of rice production a certain percentage of the land they had in rice production the previous year. The land set aside can be used to produce other crops. Even with this program, an additional 4 million tons of surplus rice has accumulated which when disposed of will cost 1.3 trillion yen ($6.6 billion).

Besides giving economic encouragement to produce rice, the government spends the majority of its agricultural research money on rice and in 1976 instituted a multi-faceted campaign to increase rice consumption. Farmers have a number of additional reasons for concentrating on rice production. They continue to produce rice because they are "geared up" to produce rice, and are most knowledgeable in rice production. The climate is very favorable for the production of rice and the government's empha-

sis on rice research has resulted in varieties of rice that are more productive.

The important point is that despite the government's stated intention to diversify agriculture, its actions have encouraged rice production at the expense of diversification. Furthermore, given that the net revenues per hectare from raising rice, soybeans, and wheat are 877,920 yen, 298,463 yen, and 249,062 yen ($1777/acre, $604/acre, and $504/acre), respectively, Japanese farmers appear to have made the intelligent economic decision not to diversify (and in many cases have reduced production of alternative crops), but to produce rice at a level which from a societal point of view represents a misallocation of resources. This is because the rice support program along with declining per capita rice consumption produced sizable rice surpluses at a time when Japan was attempting to diversify its agriculture and limit agricultural imports. If some of the rice land had been used for production of other crops, the result would have been a lower tax bill for the rice support program and fewer imports.

JAPANESE PRODUCTION OF SOYBEANS, WHEAT, AND FEED GRAINS

In Japan, domestic production of all crops except rice has dropped dramatically in the last 20 years (Tables 4 and 5). Rapeseed area planted and production are given to illustrate that the main domestically grown substitute product for soybeans has also dropped in production. Barley statistics are listed beside those for all feed grains because barley represents such a large percentage of total feed grain production.

The reason for this "across the board" drop in production is an economic one. Traditionally, labor intensive double-cropping has been used extensively as is illustrated by the rate of total area planted (Table 4). As the Japanese economy grew, the demand and need for labor was such that many farmers took relatively lucrative part-time jobs in construction and other industries during the off-season or winter months. Also, as rice prices paid farmers rose

TABLE 4.—Total Planted Area, Soybean and Rapeseed Planted Area, and Production, Japan, 1955-1977.

Year	Total Area Planted	Rate of Utilization*	Soybean Planted Area	Soybean Production	Rapeseed Planted Area	Rapeseed Production
	1000 ha	percent	1000 ha	1000 MT	1000 ha	1000 MT
1955	6013	135.7	385	507	208	270
1960	6071	133.2	307	418	191	264
1965	6004	123.8	184	230	85	126
1970	5796	108.9	96	126	19	30
1971	5741	104.5	100	122	14	23
1972	5683	102.3	89	127	11	16
1973	5647	100.3	88	118	8	13
1974	5615	102.4	93	134	5	9
1975	5572	103.3	87	126	4	7
1976	5583	103.5	83	110	4	6
1977	5515	—	79	110	—	—

*This refers to the rate of utilization of the total area planted.
Sources: (25, 31).

TABLE 5.—Planted Area and Production of Feed Grains, Wheat, and Barley, Japan, 1955-1977.

Year	Feed Grains, Area Planted	Feed Grains Production	Wheat, Area Planted	Wheat Production	Barley, Area Planted	Barley Production
	1000 ha	1000 MT	1000 ha	1000 MT	1000 ha	1000 MT
1955	1207	2794	663	1468	995	2408
1960	1013	2657	612	1531	838	2301
1965	536	571	476	1287	422	1234
1970	270	678	229	474	225	573
1971	211	606	—	—	163	503
1972	162	418	114	284	121	325
1973	112	286	—	—	80	216
1974	105	294	83	232	78	233
1975	97	264	90	241	78	221
1976	96	247	89	222	80	210
1977	91	236	86	236	78	206

Sources: (28, 82).

rapidly, farmers chose rice as the best production alternative. Farmers could afford to be less concerned about double-cropping as a result of their increased incomes from rice production.

Crops that were previously double-cropped with rice included soybeans, wheat, rapeseed, and barley. The decrease in double-cropping alone accounted for almost a 2,100,000 ha decrease in planted area. This decrease can be approximately accounted for by the 1,600,000 ha decrease in soybeans, wheat, rapeseed, and feed grain production as well as the loss of 500,000 ha due to urbanization of the land. It is interesting to see that following the recession of 1973, double-cropping increased slightly, which lends further credence to the relationship between farmer income and double-cropping.

The extent to which future domestic production will affect imports is an important subject. In 1975, the Japanese government issued a report which projected consumption and production of the major agricultural commodities in 1985 (28). The projection for soybeans is 202,000 ha to be planted and 427,000 MT to be produced (Table 6).

The general feeling among USDA personnel, and even many Japanese government experts (68), is that the projection is extremely optimistic. This is because the projections call for a major reversal in the trend of decreased plantings and a sizable increase in yield—neither of which the government has been able to accomplish in the last 20 years. However, should the rice production adjustment program work, it would be conceivable that the acreage planted projection could be met for soybeans. It is doubtful that a 50% increase in yield can be achieved in the next 8 years in light of the fact that over the last 20 years, only an 8% increase was realized. The same scenario holds true for barley and wheat except that it would be doubtful that the 256,000 ha planted area in barley and the 178,000 ha planted area for wheat can be achieved even with the rice adjustment program.

In summary, even if the 1985 government projections (which it has recently started to call goals) for domestic production of soybeans, wheat, and feed grains are met, there will be little effect on imports because domestic production would still account for only 8% of the consumption of soybeans, 9% of the consumption of wheat, and 4% of feed grains consumed in 1985.

THE GOVERNMENT'S ROLE IN DOMESTIC AGRICULTURE

The Japanese government's role in the domestic food economy is very important in determining what will be produced and consumed. Until the present, most of this control was in the form of government-controlled prices. However, the government's rice production adjustment plan which requires farmers to set aside a certain percentage of their past rice

TABLE 6.—1985 Projections of Domestic Soybean, Barley, and Wheat Demand-Supply Situation for Japan.

	1972	1985	1972-1985	Annual Rate of Increase
Soybeans				
Demand for food	621	707	113.8%	1.0%
excluding for oil (1000 MT)	(3,496)*	(5,007)*	(143.2%)	(2.8%)
Production (1000 MT)	122	427	336.2%	9.8%
Planted area (1000 ha)	89	202	227.0%	6.5%
Self-sufficiency ratio	20% (4%)	60% (9%)*		
For food per capita per year	5.7 kg	5.7 kg	100.0%	0.0
Barley				
Total demand (1000 MT)	1,842	2,502	135.8%	2.3
Production (1000 MT)	324	890	247.7%	8.1%
Planted area (1000 ha)	121	256	211.6%	5.9%
Self-sufficiency ratio	18%	36%		
For food per capita per year	1.3 kg	0.8 kg	61.5%	—3.7%
Wheat				
Total demand (1000 MT)	5,372	5,899	109.8%	0.7%
including for feed (1000 MT)	(713)	(822)	(115.31%)	(1.1%)
Production (1000 MT)	284 1000t	553	194.7%	5.3%
Planted area (1000 ha)	114	178	156.1%	3.5%
Self-sufficiency ratio	5%	9%		
For food per capita per year	30.9 kg	29.4 kg	95.1%	0.4%

*The figures in parentheses are for soybeans including those for crushing.
Source: (28).

acreage is a partial deviation from this pattern[7] and may result in sizable increases in the production of soybeans, wheat, and barley.

Barley marketing is conducted in a manner almost identical to that of rice. Under the Food Control Act of 1942, which was set up to secure a steady supply of rice, barley, and other foodstuffs at reasonable prices in order to meet the food shortage during the war, barley was required to be sold to the Food Agency of the government. Since 1952, the marketing of indigenous barley has been free of government price control, although the government has been obligated to buy on request unlimited quantities of barley from producers. In fact, nearly all the indigenous barley (except barley for malting) has been sold to the government because the government buying price has been higher than world prices. Therefore, the price support system has turned out to be very similar to direct government control of marketing. The barley is purchased by the government at a producer, or purchase, price and is then resold at a lower price to processors. Most of the domestic barley is used for food and the majority of the imported barley is used for animal feed. Therefore, the domestic barley and imported barley are largely in two different markets. However, the Food Agency (which controls barley while the other feed grains are under the auspices of the Commercial Feed Section of the Livestock Bureau) is the sole importer of barley. The imported barley used for food is resold at the same resale price as domestic barley, resulting in a profit for the Food Agency. A short history of the government prices for barley, soybeans, wheat, and rapeseed is given in Table 7.

In 1939, wheat was placed under state control in order to control the supply and demand for food (5). In 1942, all regulations for various crops were consolidated into a single Food Control Law. This direct control was continued until 1952 when, with the enactment of a second Food Control Law, the marketing of domestic wheat was decontrolled. Under this act the government is required to purchase all wheat offered for sale.

Since 1955, nearly all marketable domestic wheat has been purchased by the government because the government purchase price has been set higher than the price at which the government resold the wheat (Table 8). The relatively high (based upon world standards) government purchase price resulted from the purchase being based on an agricultural parity index (6). The resale price of wheat was actually reduced from 1960 to 1972. Under provisions of the Food Control Law, the government pur-

[7]It is partial deviation because the government pays the farmer not to grow rice but the incentive payment is far less than the profit would be from growing rice. An example would be that the incentive payment to shift the land to a perennial crop was 40,000 yen/ha ($147/ha), which is a small payment in light of the profit from rice production/ha (which was estimated to be approximately $4,290/ha) in 1977. However, the plan is further enforced by the threat that the government will not buy rice produced on land that was to be set aside. It is this threat which has never been used that puts the "teeth" into the rice production adjustment plan (53). The authors believe that this type of threat would not be carried out since the situation in all probability would not come to that stage. The government and other sectors, including the farm sector, seem to work together more and do not take the adversary positions seen between government and other sectors in the U. S.

TABLE 7.—Japanese Government Prices for Barley, Wheat, Soybeans, and Rapeseed, 1970-1977.

	1970 Yen/60 kg ($/bu)	1972 Yen/60 kg ($/bu)	1974 Yen/60 kg ($/bu)	1976 Yen/60 kg ($/bu)	1977 Yen/60 kg ($/bu)
Naked Barley					
Purchasing price	3693 (4.66)	4087 (6.04)	5913 (9.22)	7014 (10.75)	9954 (16.92)
Selling price	1819 (2.30)	1798 (2.66)	2348 (3.66)	3099 (4.75)	3099 (5.27)
Wheat					
Purchasing price	3552 (4.48)	3931 (5.81)	5685 (8.86)	6745 (10.34)	9666 (16.43)
Selling price	1940 (2.45)	1895 (2.79)	2589 (4.04)	3297 (5.05)	3297 (5.60)
Soybeans					
Purchasing price	5010 (6.33)	5800 (8.57)	8850 (13.80)	10433 (16.00)	14846 (25.24)
Rapeseed					
Purchasing price	4710 (5.95)	5255 (7.76)	7685 (11.98)	9080 (13.92)	12177 (20.70)

Source: (31).

chase price of wheat is supposed to be set at a level which will encourage domestic production. In most countries these price levels would have encouraged sizable production increases. However, as previously noted, these artificially high prices for wheat still left wheat less profitable than rice and the production of wheat continued to decrease.

The method of determining the purchase price is set by the Food Control Law (6), which states in Article 402:

> "The Government purchase price shall, in accordance with the provisions of the Cabinet Order, be set at a level so as to ensure the production of barley wheat. These prices shall be calculated by multiplying the average Government purchase prices of barley and wheat in 1950-51 by the agricultural parity index (*i.e.*, index of all prices paid for goods and services by producers)."

Since 1974, the Government has been making wheat production promotion payments in addition to supporting a purchase price. This incentive was included in the purchase price after 1977. Also, in 1976 a subsidy for the promotion of wheat production on harvested paddy fields was instituted. In addition, farmers are eligible to collect 450,000 yen/ha if the wheat is farmed cooperatively.

Government purchase of soybeans is covered under the Soybeans and Rapeseed Deficiency Payments Act of 1961 which provides for the difference between the standard producer price and market prices. Large producer organizations such as Zennoh[8] regulate the marketing of soybeans according to government-approved schemes. The program is set up so that the producers are paid the government purchase price by the cooperatives and then the cooperatives are paid the difference between the purchase price and the market price by the government. In addition to the high support price for soybeans, in 1974, 1975, and 1976, there were additional incentive payments of 2500 yen, 3000 yen, and 3500 yen per 60 kg, respectively, each year. This means that in addition to the base purchase price in 1976 of 10,433 yen/60

[8]The official translation for Zennoh is: The National Federation of Agriculture Cooperative Associations. Zennoh markets 94% of the rice, 80% of the barley, and a large proportion of domestic soybeans (85).

TABLE 8.—Government Buying and Selling Prices of Domestic Wheat* and Operating Costs, Japan, 1960-1978.

Year	Government Buying Price ($/MT)†	Government Buying Price‡ (A)	Government Selling Price (B)	Government Operating Expense (C)	Difference Between Government Selling Price and Cost Price (B) — [(A) + (C)]
		Yen per 60 kg			
1960	99.96	2,264	2,024	264	—504
1961	105.18	2,404	1,996	258	—666
1962	111.86	2,525	1,971	240	—794
1963	113.88	2,594	1,971	158	—781
1964	120.52	2,712	1,971	340	—1,081
1965	125.29	2,834	1,971	376	—1,239
1966	133.44	3,023	1,954	293	—1,362
1967	139.72	3,155	1,941	335	—1,549
1968	150.03	3,291	1,941	312	—1,662
1969	154.51	3,388	1,935	322	—1,775
1970	163.49	3,552	1,940	338	—1,950
1971	202.62	3,788	1,944	369	—2,213
1972	221.31	3,931	1,895	364	—2,400
1973	270.53	4,466	2,620	430	—2,276
1974	435.52	5,685 (2,300)	2,589	598	—3,694
1975	471.30	6,300 (2,500)	2,979	734	—4,055
1976	538.91	6,574 (2,900)	3,297	786	—4,234
1977	701.05	9,666 (600)	3,297	992	—7,361
1978 (Preliminary)	780.58	9,863 (600)	3,297	1,095	—7,661

*Prices through 1968 are for Class II, Grade II.

†These figures include the purchase price plus the incentives.

‡The figures in parentheses show the contract production incentive and production promotion incentives that farmers receive in addition to the purchase price of wheat.

kg, there was an incentive payment of 3500 yen so that the actual purchase price of soybeans in 1976 was 13,933 yen/60 kg or $21.37/bu. Furthermore, the government has just initiated a program to transfer more land from rice to soybean production, using two sizable incentives which can total as much as 1,200,000 yen/ha or approximately $2,428/acre.

The first incentive program pays from 550,000 to 700,000 yen/ha (52, 79) to farmers switching rice fields to soybean production. The second incentive program pays up to 500,000 yen/ha (47) for farmers to cooperatively farm the new soybean land. The purpose is to encourage a village of farmers to combine all their small parcels of soybean land into one more sizable plot and to designate a few of the producers to farm it. This frees the remaining farmers to pursue other employment. The larger plot of land also allows for the economical utilization of additional capital inputs. It should be noted that both of these incentives are available for barley production as well.

The level of support for the agricultural sector by the Japanese government is sizable as evidenced by the incentive payments ($2,428/acre just to switch production of crops) and price supports. This financial support is seen in an increasing percentage of the total government budget being spent on agriculture. In 1973 and 1974, the MAFF budget was 10% of the total. The majority of that 10% is now being allocated to price supports, whereas prior to the middle 1960's the majority of the agriculture budget was allocated to land and production improvement projects. The government's domestic agricultural policy has become a political and economic problem both inside and outside Japan.

THE LIVESTOCK AND POULTRY INDUSTRY IN JAPAN

Trends in Production and Industry Structure

The primary demand for soybeans and feed grains is a result of the production of livestock and poultry. Therefore, in studying the demand for feed grains and soybeans, it is important to study the aspects of the livestock and poultry industries that affect the import demand for these commodities—namely the trends in production, industry structure, and Japan's trade policy on livestock and poultry products.

The production of livestock and poultry products in Japan has increased severalfold since 1960 (Table 9). This increase in production of livestock and poultry has resulted in a comparable increase in the demand for feed grains and soybeans.

The increase in production of broilers in Japan has been most spectacular. Starting in 1960, from essentially no broiler production in Japan, broiler production expanded to more than 1,000,000 MT in 1977. Likewise, production of eggs has been a growth industry. Poultry is Japan's only livestock industry sector in which the concept of integration has been put into effect. This has been primarily due to the following factors:

- Poultry production, in particular that of broilers, was started relatively late, after Japanese meat consumption had begun its very rapid growth.
- The mechanized requirements of poultry production are more favorable to the highly industralized operations within Japan's physical conditions.

TABLE 9.—Production and Importation of Livestock and Poultry Products, Japan, 1960-1976.

	1960	1965	1970	1974	1975	1976
	1000 Metric Tons					
Beef						
Production	142	208	278	321	353	298
Imports	—	—	23	76	64	130
Pork						
Production	147	364	734	1098	1040	1056
Imports	5	0	17	59	118	203
Broilers						
Production	0	150	500	833	856	978
Imports	0	6	11	25	21	37
Eggs						
Production	512	1037	1734	1799	1788	1859
Imports	—	—	33	28	17	17

Sources: (9, 24, 25, 69-81).

- Very high degrees of involvement on the part of the major Sogo Shoshas[9] as "integrators", as they saw the large potential opportunities.
- A number of joint ventures with U. S. breeding stock companies not only brought to Japan the world's best breeding stock, but also the latest technology in production of poultry products.

Integration in the livestock industry (primarily in the broiler industry but to a smaller extent in the swine sector) has taken place at the initiative of the powerful Sogo Shoshas which have played the role of integrators. They have organized many projects through their subsidiaries, affiliated companies, and/or firms with close business relations in the broiler-related sectors. These companies include producer and sales companies of formulated feed, meat processors, convenience food manufacturers, supermarket chains, restaurants, etc. Sogo Shoshas formed their own integrated company (sometimes including independent companies) exerting significant control over the group companies involved. A number of broiler firms and processing plants have been established in the past 5 to 10 years and are operated as joint ventures by Sogo Shosha group companies and independents, over which the trading companies keep the majority control. Examples of these operations are (9):

- Mitsui Group: Daiich Farm produces 4.5 million day-old chicks per year.
  Daiich Reizo operates 75 broiler processing plants in Japan.
- Mitsubishi Group: Japan Farms runs four farms with an output of 2 million broilers per year.
- C. Itoh Group: C. Itoh Prima broiler group operates eight processing plants with a total capacity of 10 million birds per month.
- Marubeni Group: Runs 18 farms raising Chankey broilers. Operates five processing plants with a capacity of 1 million birds per month.
- Toshoku Group: Runs 20 farms producing 2.5 million broilers per year.
  Toyo Broiler processes 1.5 million birds per year.

This is in contrast to the majority of the most successful, large, integrated operations in the U. S. which started from the farm level and built up.

Swine production in Japan has been dynamic in the last 20 years. The production of pork has increased by almost 800% since 1960. The facilities involved in production of pork represent one of the more capital-intensive agricultural ventures in Japan. The technology of waste disposal used by some hog production operations is superior to that used in U. S. swine operations. The structure of the swine industry is becoming more and more concentrated, with a 60% drop in the number of producers between 1970 and 1977. Also, there has been some investment by large Sogo Shosha firms. Two examples of this vertical integration by Sogo Shoshas are: 1) in 1969, Mitsubishi, Nihon Nosan (feed manufacturer and member of Mitsubishi group), and Japan Ham (processors) established Japan Farm which was to produce 0.5 million broilers per month, 100,000 hogs per year, and 500 tons of eggs per month; 2) C. Itoh (a large trading house and head of a Sogo Shosha), Kasumigaura Livestock Production Co., Amino Feeds, and Prima Ham Co. (processor) built a farrow-to-finish operation to produce 35,000 hogs per year. The cost of producing hogs in Japan is somewhat higher than in the U. S., but relatively much more competitive than beef production.

Beef production has had the smallest growth within the livestock sector in the last 20 years. Nonetheless, there have been changes in the production of beef. Probably the most noticeable change has been the decline in the importance of the traditional Wagyu breed of beef. The Wagyu cattle require grain feeding for 3 years before they are ready for market. In place of the Wagyu cattle, there has been increased use of Western breeds of cattle which require less time to reach market weight.

The number of cattle per farm has increased while the number of cattle farms has decreased. In 1970, 901,600 households were raising beef cattle; by 1977 this had declined to 424,200. Also, there has been some effort made by large firms and cooperatives to develop large feedlots. One example of this is Japan Beef Corporation which was established in 1971 with plans to furnish 1,000 head of cattle per year. One problem facing these organizations has been the difficulty of securing the needed land. Another problem is the high cost of inputs and small scale of production, which results in per pound production costs for beef of approximately 2 to 2.5 times that of the U. S. Furthermore, Japanese consumers pay 6 times as much for beef as do customers

[9]Sogo Shosha is the present day version of the Zaibatsu, which existed prior to World War II. The Sogo Shosha is a sort of formal, extremely large holding company headed by a trading company and a bank. The importance of the large Sogo Shosha to Japan's modern business and industry is illustrated by the six largest trading companies owning voting equity interest in a total of 924 firms comprising more than one-half of the firms in the stock exchange markets in Japan (64). Furthermore, the division of tasks among manufacturers, financiers, and traders has succeeded in delegating the role of "middleman" to the trading company. Mitsui is an example of a Sogo Shosha The Mitsui group includes a feed manufacturing company, soybean processing company, flour milling company, and grain handling company, as well as many other companies.

in the U. S. because less efficiency in processing and marketing adds 2.5 to 3 times greater marketing margin in Japan than in the U. S.

Importation of Livestock Products

The government projections for production and consumption of meat products of different types are shown in Table 10. The most important figures to note are the self-sufficiency figures which represent the proportion of domestic production to consumption. Since Japanese self-sufficiency of meat is supposed to increase from 81% to 86%, the government is planning to decrease imports of animal products relative to domestic production which is consistent with stated objectives (33). Given the preceding discussion on potential domestic grain and soybean production, this will mean a relative increase in imports of feed grains and soybeans. It should be noted, though, that USDA analysts[10] do not expect the projection for beef production in particular to be realized.

[10]These opinions were obtained through personal conversations with USDA economists.

In order to protect Japanese producers, the government has built a restrictive barricade of import controls. The government influence on the livestock market is exerted through the Livestock Industry Promotion Corporation (LIPC) which was established under the authorization of the Price Stabilization of Livestock Products Law in 1961 and is under the guidance of the Ministry of Agriculture, Forestry and Fisheries (MAFF). Floor and ceiling prices are determined by the MAFF in such a way as to cover costs of production and insure incentives to increase production. Then the LIPC works to maintain wholesale prices within the limits set by the MAFF. It does this by buying and selling meat (adjusting its own stocks) at the marketplace.

A goal for the import quota for beef is set semiannually by the MAFF based upon its estimate of Japan's beef deficit and current prices of domestic beef. The quota can be adjusted during the year. The great majority of the quota is allocated to the LIPC which handles the importing of the beef. The difference between the world or imported price of the

TABLE 10.—1985 Projections of Japanese Meat Consumption and Production by Type.

	1972	1985	1972-1985 Percent	Annual Rate of Increase Percent
Meat Demand				
Total demand (1000 MT)	2,147	3,193	148.7	3.1
Production (1000 MT)	1,730	2,747	158.8	3.6
Self-sufficiency ratio	81 %	86 %		
For food per capita per year	14.2 kg	18.6 kg	131.0	2.1
Beef				
Total demand (1000 MT)	367	625	170.3	4.2
Production (1000 MT)	290	508	175.2	4.4
Beef cattle (1000 head)	1,776	3,305	186.1	4.9
Self-sufficiency ratio	79 %	81 %		
For food per capita per year	2.4 kg	3.6 kg	150.0	3.2
Pork				
Total demand (1000 MT)	883	1,335	151.2	3.2
Production (1000 MT)	793	1,325	167.1	4.0
Pigs (1000 head)	7,168	11,790	164.5	3.9
Self-sufficiency ratio	90 %	99 %		
For food per capita per year	5.6 kg	7.5 kg	133.9	2.3
Chicken				
Total demand (1000 MT)	668	915	137.0	2.4
Production (1000 MT)	640	914	142.8	2.8
Number of chicks (1000 head)	68,650	102,500	149.3	3.1
Self-sufficiency ratio	96 %	100 %		
For food per capita per year	4.7 kg	5.7 kg	121.3	1.5
Other Meat				
Total demand (1000 MT)	229	318	138.9	2.6
For food per capita per year	1.5 kg	1.8 kg	120.0	1.4

Source: (28).

beef and Japan's wholesale price is "profit" to the LIPC.

The imports of pork are very tightly controlled with a variable tariff rate that is somewhat linked to the domestic price level of pork. The principle, of course, is to prevent the inflow of lower priced pork from abroad, yet keep the price of pork to the consumer from skyrocketing during periods of short domestic supply.

The imports of poultry products are controlled with tariffs. The tariff on broilers and/or broiler parts is at present 20% of the imported cost.

JAPANESE TRADE POLICY

One of Japan's major concerns in connection with its food system is that of a stable supply. Since Japan will be dependent indefinitely upon foreign sources of food, it is reasonable that Japan should be concerned about the stability of its sources. This is not a new problem, but one which has troubled Japan's leaders since rice was first imported after the Sino-Japanese War (50, 51). More recently, Japanese leaders have expressed concern and displeasure over Japan's dependence on the U. S. as a dominant supplier of many vitally needed agricultural products. This concern has surfaced as a consequence of the recent turmoil in world agricultural commodity markets and in particular the U. S. soybean embargo in 1973. In the opinion of Japanese leaders, this concern is very real and has not diminished.

Japanese concern over a stable food supply and the substantial dependence upon the U. S. has produced a Japanese trade policy of diversification. In 1966, the stage for diversification of suppliers was set when, in an article entitled How to Secure a Stabilized Supply of Food, Ogura (4) (who at the time was chairman of a council within MAFF in charge of technical and economic research programs in agriculture) argued the following:

> "We must consider whether it is advisable for the nation to remain dependent upon imports (agricultural) from the United States as at present . . . It is time for Japan to establish a new food supply system from an international point of view with consideration to the necessity of agricultural development in the friendly countries (less developed countries or LDC) as well as to trade relations, instead of merely trying to purchase cheap food in order to meet the shortage at home."

Since 1966 a number of programs have been started by the Japanese government and commercial organizations (private sector projects are discussed in the next two sections). These programs are aimed at: 1) assuring ample supplies of agricultural products and industrial raw materials, 2) diversifying sources to maintain constant supply, 3) increasing supplies in world trade to secure stable prices, 4) providing foreign exchange to LDC's so that they can purchase Japanese industrial products, and 5) obtaining the good will of host countries.

The majority of the Japanese programs, whether in the form of loans, aid, or commercial investment, have been oriented toward the development of production-for-export projects. A production-for-export project is one in which Japan helps a country to develop agricultural projects to produce products which are needed by and can be exported to Japan.

Coinciding with this policy of diversification had been a call upon and pledge by Japan, in accordance with the United Nations Second Development goal for developed countries, to extend to LDC's assistance of 1% of GNP (gross national product) by 1975 (55). Japanese assistance is generally part of a larger package including loans, loan guarantees, commercial investment, and technical assistance. This system gives priority to those countries providing a favorable climate for Japanese investments.

According to the Japanese International Cooperative Corporation (ICC) Annual Report for 1976 (23), 1.70 billion yen was spent on agricultural projects involving 180 specialists in 20 countries. Generally, the response in the U. S. to these supplier diversification projects has been one of alarm and concern with those associated with the operation of the Japanese market. However, as pointed out by a Japanese government official, these projects can either be viewed as supplier diversification projects or they can be viewed in the same light as the much larger U. S. agricultural aid programs.

Another Japanese trade policy which is directed toward securing a stable supply of needed agricultural products and is not inconsistent with the diversification policy is that of trade agreements. The first trade agreement with the U. S. came in 1975 after the soybean embargo and was called the Abe-Butz agreement. It called for Japan to import and the U. S. to supply 3 million tons of both wheat and soybeans and 8 million tons of feed grains. This agreement ran out in 1978. According to Japanese government documents, the Minister of MAFF approached Secretary Bergland during the trade talks in September 1978 concerning a new agreement but did not receive a positive reply. There is little question that if there is to be another trade agreement, the U. S. will now have to initiate it.

Annually, the Japanese sign wheat trade agreements with the Canadians and Australians. These agreements generally call for importation of a certain

amount of wheat ± 10% and are usually for quantities that would in all likelihood have been imported without agreements.

According to Agricultural Attaches' reports, in 1976 the Brazilian government contacted Japan requesting a long term agreement on soybeans (68). The Brazilians requested that Japan import 300,000 MT annually (compared with 82,000 MT in 1974, 70,000 MT in 1975, and 62,000 MT in 1976). Although on a purely economic basis Brazil cannot compete in the Japanese market, it is felt that the offer is tempting to Japan because:

- It would be politically popular as a step toward diversification.
- It may help Brazil become a better market for Japanese exports and capital.
- Since Brazil has already signed similar agreements with some EEC countries, not going along might imply that Japan would suffer during a period of tight supply.

Since 1962 there has been a Japan-China Soybean Agreement. Once again, quantities to be imported were agreed to annually and then designated trading companies (33 in all) were called upon to handle the importation.

Although not specifically a trade policy, an acknowledged trade preference of the Japanese government is not to have low feed grain and soybean prices which are inherently unstable. The Japanese government would prefer instead to have moderately high stable prices. One reason for this is that high prices discourage excess consumption of these imported consumer (consumer in the sense that they are not to be processed for export) commodities. The Japanese prefer stability for a multitude of political and cultural reasons.

SECTION SUMMARY

Summarizing this section, the following points have been highlighted regarding feed grain and soybean imports:

- The Japanese agricultural system is a very complex system that has resulted from the combination of two very different cultures, severely restricted land resources, and a democratic but extremely inefficient agricultural structure.
- Domestic feed grain and soybean production possibilities will in no way significantly affect imports of those products.
- There is every indication that in the future a larger percentage of the meat consumed in Japan will be produced in Japan, thus essentially eliminating the possibility that feed grain and soybean imports might be cut as a result of increased imports of livestock products. The Japanese are committed to importing raw materials rather than finished goods such as livestock.
- The Japanese trade policy with respect to feed grain and soybean imports is one of diversification. This is being pursued through aid programs, investments in potential exporting countries, and trade agreements.

The Japanese Feed Grain Market

The importance of feed grains has increased as modern man's affluency has permitted him to increase consumption of livestock products. The economic ability of most people in the world to consume livestock products is greater than it has ever been in the past. Accordingly, the production, processing, marketing, and trade of feed grains has become a very important activity in most countries of the world, including Japan. This section looks at the various sectors in Japan's food economy which affect feed grain imports.

JAPANESE USES FOR FEED GRAINS

The Japanese demand for feed grains arises from the consumer demand for livestock products,[11] thus resulting in a demand for livestock feed and for industrial products made from feed grains (*i.e.*, starch, sweeteners, etc.). For the purpose of this analysis, feed grains include corn, milo, sorghum, oats, rye, and barley. One minor inaccuracy (and a continually declining one) results from the fact that barley is not only a feed grain, but is also an inferior food grain. Thus, as income levels in Japan have continued to increase, the use of barley as a food grain has declined significantly.

The ratio of domestic demand for feed grains for feed use to total feed grain consumption in Japan has increased dramatically since 1960 (Table 11). This is the result of a number of factors: 1) The increase in consumer demand for livestock products has risen at a much faster rate than that for most other products, including industrial products from feed grains. 2) While total livestock production has increased, formula feed production has increased more rapidly (Table 12). 3) The proportion of formula feeds to total concentrated feeds increased from 36% in 1960 to 81% in 1970. 4) The percent of feed grain use in

[11]The term livestock products in this section refers to both livestock products and poultry products.

TABLE 11.—Demand and Utilization of Feed Grains by Type, Japan, 1960-1977.

	Barley		Corn		Sorghum		Feed Grains		
	Total Consumption	Domestic for Feed	Total Consumption	Domestic for Feed	Total Consumption	Domestic for Feed	Total Consumption	Domestic for Feed	Domestic for Feed as Percent of Total Consumption*
	1000 Metric Tons								
1960	2301	640	1821	1721	114	114	4513	2651	58.7
1965	1785	665	2956	2414	1611	1596	6603	4869	73.7
1970	1379	719	5282	4130	4109	4099	11116	9261	83.3
1972	1369	980	6795	5470	3376	3366	11920	10161	85.2
1974	1637	1232	7415	6090	4050	4040	13318	11535	86.6
1975	1355	1755	7925	6400	3940	3930	13892	12315	88.6
1976	1820	1420	8435	6850	4860	4850	15421	13380	86.7
1977	1925	1525	9227	7552	5101	5090	16632	14503	87.2

*This column refers to the figure for total feed grains.
Source: (82).

TABLE 12.—Production Index of Livestock and Formula Feeds, Japan, 1960-1976 (1970 = 100.0).

Year	Total Livestock	Formula Feeds
1960	36.8	19.1
1965	67.4	54.0
1970	100.0	100.0
1973	108.3	120.6
1976	114.7	121.5

Source: (31).

the formula feeds has been increasing at the expense of bran products (Table 13).

The relative increases in the production of formula feeds reflects a greater recognition by farmers of the value of modern nutrition in increasing the turnover rate of livestock. The increased turnover was desired in order to meet rising consumer demand (61). The increase in the percentage of feed grain use in formula feeds represents a move to higher energy feed which also increases the growth rate (turnover) of the livestock. However, whether this was the motivating factor or whether a limited domestic supply of bran necessitated the increased feed grain use in formula feeds is uncertain (21). A perspective of the production of formula feeds in Japan is gained from Table 14. The main industrial use of feed grains is for starch production (Table 15).

FORMULA FEED INDUSTRY

The formula feed industry is the primary purchaser of feed grains in Japan. While the production of formula feeds over the last 20 years has increased by eight times, within the total industry the growth of the larger companies has been significantly greater than that of the smaller companies. This is the result of better financing, more efficient and larger plants, and better products as a result of quicker adaptation of new technology and knowledge in the nutritional aspects of the product. Table 16 illustrates the change in the number of plants and capacity. Generally, the larger companies own the larger plants, which is consistent with the fact that the larger companies have grown faster than the smaller ones. Table 17 gives the production capacities by factory size in 1977. An example of the concentration in the feed industry is that of the 14 largest feed mills in Japan, 7 are controlled by the largest feed manufacturer (Zennoh) and 6 out of the remaining 7 are controlled by the 6 next largest feed manufacturers.

The capacity of the formula feed manufacturing plants is based on an 8-hour shift, 25 days per month. In 1977, total production was 19,527,000 MT with a total capacity of 18,035,000 MT. There is relatively little double-shift work. This is surprising

TABLE 13.—Formula Feed Mix Ratio, Japan, 1963-1977.

Year	Corn and Sorghum	All Brans	Soybean Meal	Others
	percent			
1963	53.7	17.6	6.6	22.1
1965	53.9	16.0	7.6	22.5
1970	55.7	12.4	9.7	22.2
1973	56.4	9.1	10.0	25.5
1976	61.0	8.8	10.4	19.8
1977	62.0	7.7	11.1	19.2

Sources: (34, 61).

TABLE 14.—Production of Formula Feed by Type, Japan, 1960-1977.

	1960	1965	1970	1972	1974	1975	1976	1977
	1000 Metric Tons							
Total	2433	7677	14824	17044	16771	16355	18006	19527
Poultry	1917	4980	8450	9163	8777	8838	9383	9743
Swine		1769	3932	4699	4860	4535	5197	5478
Dairy	289	786	1741	1945	1792	1833	1960	2088
Beef	5	78	876	1453	1665	1544	2004	2139
Others	223	63	77	85	69	65	74	78

Sources: (24, 77).

because the initial plant and equipment require such sizable capital inputs that it would be expected that the plants would run 2 to 2½ shifts per day as is the case in the U. S. Although some feed plants do run regular double shifts, no reasonable explanation was discovered for the industry-wide under-utilization of formula feed plants.

The structure of the formula feed industry is such that the Zennoh affiliated cooperatives (48 cooperatives are affiliated with Zennoh) control 40% of the total formula feed business. The 10 largest private companies control the next 40% of the market, with the remaining 73 companies sharing the last 20% of the market.

As has occurred in most Japanese industries since 1946, the larger formula feed companies have aligned themselves with Sogo Shoshas (before the war they were known as Zaibatsu), which can in a very general sense be considered holding companies with a trading company as the head. Three good examples of this are: 1) Nihon Nosan Kogyo (second largest feed manufacturer behind Zennoh), which belongs to the Mitsubishi group; 2) Nisshin Flour Milling

TABLE 15.—Starch Production, Japan, 1973-1976.

Type of Starch	1973	1974	1975	1976
	1000 Metric Tons			
Corn starch	706	617	701	800
(food)	(376)	(373)	(433)	(470)
(non-food)	(303)	(244)	(268)	(330)
Other starches	1061	947	1163	1200
Total	1761	1564	1864	2000

Source: (70).

TABLE 16.—Formula Feed Plant Capacities, Japan, 1960-1976.

Year	No. of Companies	Total No. of Plants	Annual Production Capacity (1000 MT)	Average Annual Plant Capacity (1000 MT)	Percent Change from Previous Year Given
1960	118	142	4,008	28.23	
1965	148	194	8,482	43.72	54.9
1970	140	212	14,157	66.78	52.7
1973	142	223	16,148	72.41	8.4
1974	142	221	18,666	84.46	16.6
1975	135	217	18,438	84.97	0.6
1976	132	211	18,035	85.47	0.6

Note: Capacities are based upon an 8-hour shift, 25 days per month.
Source: (34).

TABLE 17.—Number of Japanese Formula Feed Factories by Factory Capacity for 1977.

Monthly Capacity (MT)	Factories		Monthly Capacity (MT)	
	No.	Percent of Total	Total	Percent of Total
Less than 1,000	8	3.8	3,620	0.2
More than 1,000 Less than 3,000	27	12.8	47,150	3.1
More than 3,000 Less than 5,000	37	17.5	137,900	9.2
More than 5,000 Less than 10,000	84	39.8	576,750	38.4
More than 10,000 Less than 15,000	41	19.4	453,300	30.2
More than 15,000	14	6.6	284,200	18.9
Total	211	100.0	1,502,920	100.0

Note: Capacities are based upon an 8-hour shift, 25 days per month.
Source: (34).

TABLE 18.—Total Feed Grain Imports by Type of Grain, Japan, 1955-1977.

Year	Barley	Corn	Sorghum	Rye	Oats	Total
	1000 Metric Tons					
1955	576	343	103	0	0	1,022
1960	0	1,355	46	12	2	1,414
1962	0	2,316	405	7	4	2,732
1964	471	3,229	1,042	4	10	4,757
1966	447	3,598	2,279	74	12	6,410
1968	634	5,145	2,362	66	24	8,231
1970	768	6,018	3,880	73	135	10,874
1971	865	5,007	3,879	160	197	10,109
1972	1,004	6,052	3,586	170	204	11,016
1973	1,322	7,771	3,843	152	110	13,197
1974	1,418	7,940	4,564	28	169	14,117
1975	1,598	7,470	3,895	54	141	13,157
1976	1,762	8,383	4,339	39	150	14,674
1977	1,735	9,068	5,279	141	169	16,392

Note: There are a few inconsistencies between Tables 11 and 18 due to the use of two different sources. However, the numbers within the tables are consistent and provide meaningful information.
Source: (67).

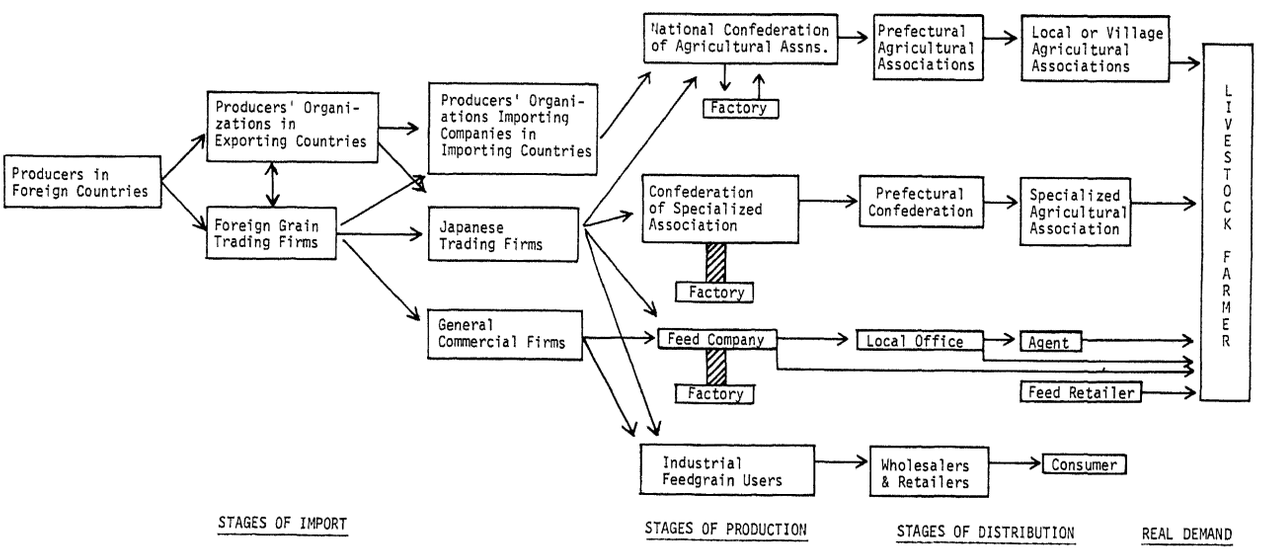

FIG. 2.—The flow of feed grains in Japan.

(fourth largest), which belongs to the Fuyo group; and 3) Nippon Formula Feed Manufacturing (fifth largest), which belongs to the Mitsui group. Generally, when a company belongs to a group, it does as much of its business as possible with other companies within the Sogo Shosha.

The pricing of feeds in Japan is quite different from the U. S. The price of formula feeds in Japan is set by Zennoh. At the beginning of each quarter of the fiscal year, the board members of Zennoh review the overall situation and decide prices for the following quarter, taking into consideration the following factors and information (60):

- Raw ingredient prices
- The contracted feed orders for the next 3 months
- Ministry of Agriculture, Forestry and Fisheries (MAFF) propositions and administrative guidance
- Sales competition with the Japan Feed Manufacturers Association (JFMA) or private companies

Once the feed prices for the next quarter have been determined, Zennoh then "feels out" the government's attitude toward them. The prices are then agreed to by the government and Zennoh (this usually does not result in a change from the original prices) and are pre-announced to the rest of the industry (supposedly a formality) in order to give them a chance to object to the prices.

According to industry sources, none of the commercial feed manufacturers (CFM) are willing or capable of undercutting Zennoh's prices. Additionally, there is a lot of peer pressure not to undercut Zennoh's prices. Nevertheless, the seeming lack of price competition does not mean that there is a lack of competition. First of all, there is minor price competition as a result of rebates on the part of some of the smaller CFM. Also, some CFM charge higher prices in return for higher quality. Furthermore, there is competition in the form of services and credit. The cooperatives give credit to farmers in return for their feed business and the larger feed manufacturers also give credit, with the money coming from their Sogo Shosha (group) banks. In this case the cooperatives probably have an advantage over CFM in that they administer government loan programs and it appears that often a distinction is not made as to the origin of the capital (*i.e.*, government loans to farmers for equipment purchase may be loaned with some expectation that feed should be purchased from the cooperative). The strong social ties between the cooperatives and producers also give the cooperative feed manufacturers a competitive advantage.

FEED GRAIN IMPORTS

The level of Japanese feed grain imports has increased 1600% over the past 20 years (Table 18). This increasing flow of feed grains into Japan can come through a number of routes (Figure 2). The importation of feed grains is typically performed by: 1) the producer organization's importing company (Zennoh is the purchasing organization for all of the cooperatives and thus imports the feed grains for cooperative feed mills); 2) the Japanese trading firms; or 3) the general commercial firm, which might be a company importing directly. If Zennoh is included as a trading firm, then more than 95% of all Japan's agricultural imports are handled by trading firms, with the ten largest handling 75% (15). Accordingly, the feed grain imports are largely handled by these companies (Table 19). During interviews in Japan, an attempt was made to determine why the feed companies did not purchase their feed grains direct from the international grain companies and save the commission charged by the trading companies which purchase the grain from the same international grain firms.

In response, the Japanese traders and feed manufacturers gave the following reasons for the limited direct purchases:

- Japanese trading companies are willing to give small commercial feed manufacturers (even financially shaky ones) fairly liberal credit terms up to 120 days, which the international grain companies are unwilling to do. Since all of the large trading companies are connected with banks in the Sogo Shosha, it is assumed that it is the bank, not the trading company, which is ultimately giving the credit.

TABLE 19.—Corn and Milo Imports by Trading Company, Japan, 1975-1978.

Company Name	1975	1976	1977	1978 (Jan.-June)
	1000 Metric Tons			
Unicoop (Zennoh)	1524	1768	1647	1040
Marubeni	1235	1403	1898	1005
Mitsubishi	1226	1705	1913	982
C. Itoh	641	1359	1655	902
Mitsui	847	1356	1538	707
Kanematsu	378	546	545	273
Toyo Menka	356	586	782	488
Nichimen	249	716	887	485
Toshoku	185	340	432	236
Sumitomo	0	301	351	92
Nichiryo	144	237	273	154
Nissho Iwai	0	444	267	80

Source: Japan Feed Trade Assoc.

- At the present time feed manufacturers can buy feed grains cheaper from the Japanese trading companies than from the international grain firms. The reason is that as a result of severe competition in the Japanese market (as evidenced by the large number of export trading companies in the market), it is very typical for the trading companies to be selling cargo at a discount in order to sell more. The Japanese argued they were more willing to speculate and that due to their market information system were better informed, and thus were more capable of speculating profitably. It was also mentioned that it is the Japanese way to trade for many years and then to take a profit.
- Japanese trading companies are more willing and flexible in working with feed manufacturers with respect to delivery times and partial shipments.
- Many of the top trading companies and large commercial feed manufacturers are members of the same Sogo Shosha. These feed manufacturers would do all of their international trading through the trading companies that head their respective Sogo Shosha.

A close look at the above reasons is needed. It would seem that the last reason is the dominant reason that the Japanese trading companies have monopolized the imports of feed grains. As has been previously noted, the top 11 feed manufacturers in Japan produce 80% of Japan's formula feeds. Therefore, sales of feed grains to smaller companies represent a small proportion of the business and this fact certainly detracts from the net importance of the first and third reasons. Likewise, given that the last reason is the dominant one, the second reason is certainly suspect, because with a formal relationship as described in the last reason, the validity of the second reason becomes a much less relevant point.

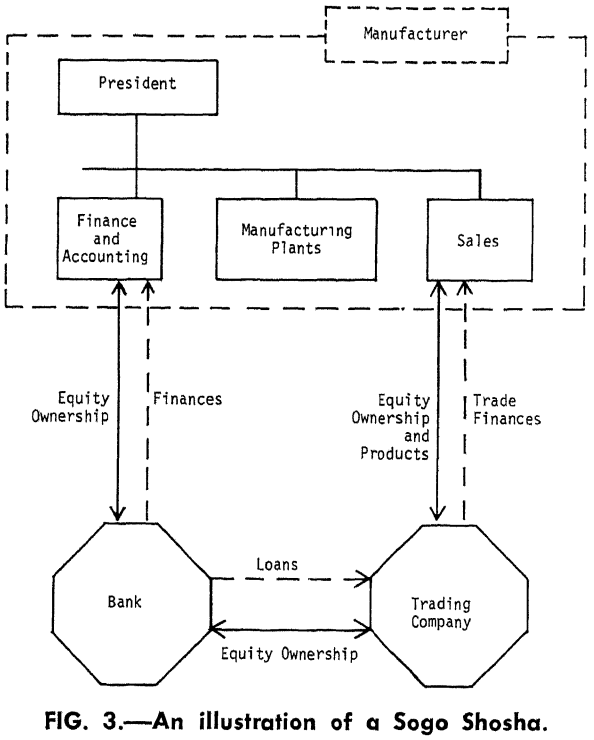

FIG. 3.—An illustration of a Sogo Shosha.

Students of Japanese industrialization and commercialization are aware of the importance of the Zaibatsu prior to World War II, and of the Sogo Shosha since the war. (The primary difference between the Zaibatsu and Sogo Shosha is ownership—not functions.) At first, the Western student of Japanese business and industry might feel the importance attributed to the Sogo Shosha is exaggerated. It is not. The six largest trading companies own voting equity interests in a total of 924 firms comprising more than one-half of the firms listed in the stock exchange markets in Japan (64). Essentially, the division of tasks among manufacturers and financing and trading firms has succeeded in delegating the role of "middle man" to the trading firms. Often loans from the Sogo Shosha bank are even directed through the trading company. Figure 3 illustrates the Sogo Shosha. As a result of the Sogo Shosha, it would be expected that the large feed manufacturers which belong to a Sogo Shosha would purchase their feed grains from the trading company, rather than direct from the international grain company.

However, this does not explain the purchasing policy of Zennoh. As a result of ideology, Zennoh's policy is to purchase one-half of its feed grain from producer export organizations, such as Farmers Export in the U. S. Farmers Export has requested that Zennoh buy 100% of its U. S. purchases from them, but Zennoh will not because of price and it does not want to accept the risks associated with a single U. S. supplier. The other 50% of its feed grain needs are purchased from Japanese trading firms. The reasons given for this are that Japanese trading company prices are lower than those of international grain companies and that the Japanese companies are more adaptable to Zennoh's needs.

While it is difficult to do a bid-by-bid analysis of price (to the extent that bids are relevant—given the Sogo Shosha), Table 20 does illustrate the price situation for imported corn from 1970 through 1975. The lines labeled "unexplained difference" show the difference between Japanese prices and the U. S. price

TABLE 20.—Corn: Unit Values and Freight Rates at Various Marketing Levels from U. S. Farmers to Japanese Importers, Marketing Years 1969-70 to 1974-75.

Item	69-70	70-71	71-72	72-73	73-74	74-75
	Dollars per Metric Ton					
(1) Unit value received by U. S. farmers*	45.67	52.36	45.52	61.81	100.39	118.89
(2) Implicit U. S. inland freight	+8.21	+8.53	+10.92	+14.07	+16.61	+21.58
(3) Total U. S. export unit value of corn	53.88	60.89	53.44	75.88	114.00	140.47
(4) U. S. export unit value to Japan	54.04	61.98	54.04	80.48	124.20	136.54
(5) Ocean freight to Japan	12.17	8.43	5.12	12.99	25.77	12.00
(6) Japanese import unit value†	64.48	72.46	63.63	81.35	137.41	156.74
(7) Unexplained difference	—1.73	+2 05	+4.47	—12.12	—12.56	+8.20
(8) Japanese import unit value, lagged 2 months	66.07	74.21	62.94	89.95	145.15	155.46
(9) Unexplained difference	—0.14	+3.80	+3.78	—3.52	—4.82	+6.92

*Unit value is the weighted season average price.

†In Japanese yen/metric ton, 1969-70, 23,194; 1970-71, 26,698; 1971-72, 19,899; 1972-73, 22,438; 1973-74, 39,094; 1974-75, 46,850.

Note: Lines 3, 7, and 9 have been developed from the information in the table as follows:

Line (3) = (1) + (2)
Line (7) = (6) — [(4) + (5)]
Line (9) = (8) — [(4) + (5)]

Source: (7).

plus freight charges to Japan from the Gulf. Interestingly, a similar comparison with shipments to the Netherlands showed that the unexplained difference in Japan was $3.42 lower than that in the Netherlands from 1970 through 1975 (7). If the Japanese price is lagged by 2 months, the Japanese unexplained difference is still $0.40 lower. This supports the argument that the import market for feed grains is extremely competitive in Japan.

Recently a number of large Japanese trading firms have expressed an interest in purchasing U. S. grain facilities. The greatest interest has been shown by Mitsui, which has already purchased equity interest in 13 facilities and is actively looking for more (Table 21). There are a number of reasons for Mitsui's decision to move into the U. S. domestic grain market, the most motivating of which is the desire to become active in the international grain trade. Mitsui claims that its market information system gives it a competitive edge in the grain trade, but that in order to compete with the international grain companies, it must acquire U. S. grain facilities and operate them itself.

U. S. POSITION IN THE JAPANESE FEED GRAIN MARKET

The U. S. is the world's largest exporter of agricultural products and is Japan's primary supplier of all agricultural products as well as feed grains. From 1975 through 1978, the U. S. supplied 62.4% of the feed grains imported by Japan. Although the macro-approach to the U. S. market position is appealing, in order to understand year-to-year fluctuations in the U. S. market share, it is necessary to look at the imports of the individual commodities by country.

Corn imports by Japan have increased at a disproportionate rate (compared to other commodities in the feed grain classification) as a result of increased use of corn in formula feeds due to its higher energy content. Since 1965, the U. S. has supplied the majority of the corn to Japan. The main two competitors in the market are South Africa and Thailand (Table 22). Since 1974, these three countries have supplied 95% of Japan's corn imports. The corn imported from South Africa is a white corn and is used primarily for corn starch production; for that use it is of superior quality to either U. S. or Thai corn. Generally, South Africa supplies most of this market, with the residual being supplied by the U. S. However, South Africa has a problem with harvests and the supplies available to Japan are somewhat unstable.

TABLE 21.—Grain Facilities in the U. S. Owned by Mitsui, 1977.

Location	Capacity (bu)	Function
Reserve, LA	4,000,000	Export
Tacoma, WA	4,600,000	Export
Vancouver, WA	5,350,000	Export
Heloise, TN	500,000	River Terminal
Henry, IL	200,000	River Terminal
Dorena, MO	500,000	River Terminal
Chillicothe, IL	100,000	River Terminal
E. Peoria, IL	20,000	River Terminal
Fort Benton, MT	315,000	Country
Wolf Point, MT	315,000	Country
Denison, IA	1,000,000	Country
Hartley, IA	600,000	Country
Farmer City, IL	2,256,000	Country

Source: Obtained through interviews with Japanese firms.

TABLE 22.—Corn Imports by Country of Origin, Japan, 1960-1976.

Year	South Africa	Thailand	Mozambique	Others	U.S.A.	Total	U.S.A. (percent)
	1000 Metric Tons						
1960	254	315	1	599*	184	1,353	14
1962	868	237	0	180	1,031	2,316	45
1965	30	576	0	525†	2,302	3,433	67
1968	1,341	633	184	445	2,541	5,144	49
1970	375	535	21	692‡	4,394	6,017	73
1972	1,175	861	261	356	3,398	6,051	56
1974	361	909	355	146	6,169	7,940	78
1975	918	778	263	147	5,354	7,471	72
1976	862	994	61	230	6,236	8,383	74

*Argentina exported 427,000 MT to Japan and Cambodia 93,000 MT.
†China exported 243,000 MT to Japan and Mexico 189,000 MT.
‡Argentina exported 497,000 MT to Japan.
Source: (38).

Thailand has been a long-time supplier of corn to Japan, the roots of which were formalized in 1961 when a Thai Corn Importers Cartel was formed in Japan. This cartel negotiates annually with the Thai government to purchase certain amounts of corn which it is then committed to buy. The price of this corn is determined by the world market price. The amount that the importers' cartel commits itself to purchase is usually the maximum that Thai officials believe will be available for export. Historically, Thailand has not been able to deliver the quantities of corn specified in the agreement. In order to expedite shipping of the corn, three Japanese trading companies invested in the Bangkok Drying and Silo Company (Zennoh has 20% interest, Mitsui 12%, and Mitsubishi 12%). Besides these two countries, the rest of the corn market essentially belongs to the U. S. and the U. S. share should remain somewhat stable, with fluctuations resulting primarily from the size of crops in South Africa and Thailand.

The primary sorghum suppliers to Japan are Argentina, Australia, and the U. S. (Table 23). Japan usually buys all the sorghum that Argentina and Australia have available for export, purchasing the remaining needed quantities from the U. S. The available supply of export sorghum from these two countries has fluctuated somewhat widely in past years as a result of weather and other factors.

Since corn and sorghum are largely substitute products, the supply and/or quality of one or the other can affect the demand for the commodity and the U. S. market position. For instance, if the sorghum imports from Argentina were low in protein as was reported in 1977 (73), this might result in an adjustment in feed formulas favoring corn at the expense of sorghum. It then would be possible for the U. S. total market share of feed grains to increase since the U. S. market share for corn is larger than for sorghum.

The last major feed grain imported by Japan is barley. In 1965 the U. S. supplied 42% of Japan's barley, but since then barley exports from the U. S. have been minimal (Table 24). The Ministry of Agriculture, Forestry and Fisheries' (MAFF) Food Agency is the sole importer of barley and thus has a monopoly on both food and feed barley. This is a

TABLE 23.—Sorghum Imports by Country of Origin, Japan, 1965-1976.

Year	Argentina	Australia	Others	U.S.A.	Total	U.S.A. (percent)
	1000 Metric Tons					
1965	127	0	20	1284	1431	90
1968	1	36	113	3330	3480	97
1970	1287	263	51	2188	3789	58
1972	532	717	207*	2049	3505	58
1974	796	721	126	2831	4474	63
1975	833	777	172†	2012	3794	53
1976	1072	870	51	2234	4227	53

*South Africa exported 172,000 MT to Japan.
†South Africa exported 119,000 MT to Japan.
Source: (38).

TABLE 24.—Barley Imports by Country of Origin, Japan, 1965-1976.

Year	Canada	Australia	France	U.S.A.	Total	U.S.A. (percent)
	1000 Metric Tons					
1965	204	161	0	269	635	42
1968	231	75	319	9	634	1
1970	553	113	104	0	770	0
1972	666	334	0	4	1004	0.4
1974	716	619	0	83	1418	6
1975	978	620	0	0	1598	0
1976	964	683	0	109	1756	6

Source: (38).

carryover from the time when barley was primarily a food grain. Now 84% of the imported barley is for feed. The imported feed barley is turned over by the Food Agency to the MAFF Livestock Industry Bureau which allocates the barley for direct feeding (approximately 1 million metric tons per year) in cattle and for formula feeds (approximately 300,000 metric tons per year). The Food Agency purchases the imported barley at one price and sells it at another price (Table 25). Since 1972 the Food Agency's cost of importing barley has exceeded the sales revenue from barley by an average of $14.9 million per year. Since barley is a substitute product for corn and sorghum, the Food Agency import system for barley has the effect of subsidizing imports of Canadian and Australian feed barley at the expense of U. S. corn and sorghum imports (71).

Consistent with the government's desire to diversify agricultural imports, the trading companies endeavor to purchase feed grains from as many suppliers as possible. The implicit desire of the government is to reduce the U. S. market share and the effect has been to relegate the U. S. to the position of residual supplier. Furthermore, the U. S. has not been without critics in Japan. In an interview with Milton Hakel (13) in 1972, Takeo Maita, President of Unicoop (trading division of Zennoh), expressed his opinion about Japan's concern over the extreme dependence on the U. S. for its food supply. Mr. Maita said:

> "Because of strikes (U. S. longshoremen) once in every 2 or 3 years, we in Japan have suffered very much in business with the U. S. If this situation continues in the future, the U. S. might lose a big buyer of grain because of just such a problem . . . Since the feed we import is intended for livestock, we have to feed them every day—day by day. We cannot have these mishaps and uncertainty about supplies continued. We will have to find another country which can dependably ship such grain to us. We really hope you can manage this problem."

Whether or not the concern is over longshoremen strikes, the same statement citing another problem could have been made with the change of few words. The questions then are, How realistic are the Japanese concerns? and How good of a supplier is the U. S.? First, the Japanese concerns are certainly realistic by the very nature of the problem. At the time of this statement, Japan had little storage capacity and was

TABLE 25.—Feed Barley Import Price by Source, Budgeted Resale Price, and Net Subsidy to Barley Imports, Japan, 1970-1976.

	1970	1971	1972	1973	1974	1975	1976
Feed Barley Import Price by Source, yen/MT							
U.S.A.	0	0	19,546	28,691	56,795	0	41,369
Canada	19,588	23,401	19,829	29,593	48,731	44,991	42,623
Australia	20,116	24,598	19,166	26,925	47,315	49,378	43,547
Feed Barley Budgeted Resale Price							
All sources*	23,270	24,947	23,158	24,929	29,954	34,055	38,018
Net Subsidy of Barley Imports†							
Million yen	2	0	566	3,778	9,380	5,681	2,815
($1,000)	(6)	(0)	(1,868)	(12,593)	(30,855)	(19,148)	(9,914

*Taking into consideration price differences, MAF sets annual resale prices of feed barley as a formula feed ingredient and/or for direct cattle consumption regardless of sources. Resale is accomplished by auction, but auction prices do not differ significantly from budgeted price.
†Gross costs (i.e., costs of purchasing and handling) less receipts from sales.
Source: (71).

essentially using the ocean transport pipeline as a storage facility for grain. The ships must arrive with regularity as stated by Mr. Maita or havoc would occur in the livestock sector. When a product is as important as feed grains are to Japan, it is always more risky to have just one supplier. Because of this concern, in 1972 Japan had great visions of increasing grain stocks available for export in the world through its production-for-export projects (discussed in the next section) in other countries. These new grain supplies were predicted to cut into the U. S. market share. Statements of this type certainly added justification to these Japanese export projects.

In direct contradiction to Mr. Maita's statement, the U. S. is widely recognized as the least vulnerable country to strikes and/or other shipping difficulties. The reason for this is the efficiency of the U. S. transportation system from the farm to the port (which is second to none) and the multitude of ports. Even if one particular port is closed for some time, the effect on grain shipments would be minimal compared to many countries because the grain could be shipped out of another port. It should be noted that the Japanese minimal storage of feed grains (often 3 weeks' supply in 1972) should not be blamed on the U. S., and in fact speaks very highly of the U. S. system that enabled Japan to work on such a low inventory. It appears that the delays Japan has had in getting shipments from the U. S. were negligible compared to their other suppliers.

Furthermore, in discussions with numerous people in grain trading, in feed, flour, and crushing industries, and in government on both sides of the Pacific, it was their unanimous opinion that in all aspects of the non-price decision criteria for purchasing grains (such as reliability, quality, shipping, and the ability to protect oneself in the market), the U. S. excels.

JAPANESE FEED GRAIN IMPORT AGREEMENTS AND PRODUCTION-FOR-EXPORT PROJECTS IN LDC'S

As discussed in the previous section, the official Japanese trade policy on the feed grain import market is that of diversification to as great an extent as possible. The purpose of this section is to look into the extent of the private sector's effort toward diversification. Given that diversification is the government's policy, it would seem natural that Japanese trading companies, with their close ties with the government and an ideology which calls for investment decisions to be made on the basis of, among other things, the good of Japan (64), would be called upon to do their part in the diversification effort.

The best way to illustrate the nature, size, and original expectations of the projects is to list some specific examples (54, 55, 64):

Indonesia: In southern Sumatra, Mitsui in partnership with Kosgoro, an Indonesian agricultural cooperative, began development of a large agri-industrial complex in 1968. As of 1970, only 2,500 acres were under cultivation, but plans were for at least 30,000 acres and exports of 200,000 tons of corn by 1980. At least three other similar projects were under way in Indonesia in 1972. All totaled, Indonesia, with a population of 110 million and much potential for importing Japanese industrial output, was expected to be producing for export 500,000 to 1,000,000 tons of corn and 200,000 tons of sorghum by 1980.

Thailand: The primary investment by Japanese commercial firms affecting feed grains in Thailand was the joint venture involving Bangkok Drying and Silo Company with Zennoh, Mitsui, and Mitsubishi which doubled that company's capitalization.

Cambodia: In 1965, a Japanese consortium was established to initiate production of corn for export in Cambodia. In May 1968, a Cambodian company (51% owned by the Cambodian government and 49% Japanese) was formed to grow corn, with expectations of exporting 200,000 to 300,000 tons by 1978.

Brazil: A Japanese-Brazilian company was formed in 1970 in Minas Gerais State on one-half million acres to produce corn, cotton, and soybeans.

Australia: Two projects involved Japanese trading firms in the production primarily of sorghum and corn, with expectations of exporting 70,000 tons by 1975.

It should be realized that it was widely written and inferred in the U. S. press that unless the U. S. aggressively marketed its products to Japan, the U. S. market share would drop as a result of these projects. However, if the original objectives are used as criteria, most of these projects have been complete failures. The primary exception is the Bangkok Drying and Silo Company. It appears that the Japanese were not able to do in the last 8 years what U. S. agricultural aid programs to LDC's have been attempting to do since World War II.

In addition to the production-for-export projects, a number of trade agreements have been made in an effort by private Japanese traders to secure supplies and diversify sources. Three of the agreements are:

- The annual agreement between the Thai government and the Thai Corn Importers Cartel on the quantity of corn to be purchased.

- A long term agreement between Australia and Zennoh for 800,000 tons of sorghum annually (75).
- An agreement between Zennoh and its Brazilian counterpart on the long-term supply of corn and soybean meal. No quantities have been announced yet (79).

Historically, these agreements have meant little since the exporting country has not been able to supply with regularity the quantity of grain agreed to and in all probability the Japanese would have purchased the quantity of grain called for in the agreement even without it.

GOVERNMENT PRESENCE IN FEED GRAIN MARKET

Formula Feed Plant Expansion Policy

The Ministry of Agriculture, Forestry and Fisheries (MAFF) control of formula feed factory expansion takes the form of licensing and administrative guidance. Prior to the world-wide recession in 1974, the government approved almost all expansion requests providing the proposed feed mill had a capacity larger than 5,000 MT per month. The MAFF has a long-term supply-demand outlook for livestock demands. From these estimates, the MAFF can calculate the formula feed required. This information is then used to determine feed plant expansion requirements.

At present, with two exceptions, the government is not allowing any feed mill expansion. The government argues that since capacity equals demand, it is not necessary to expand. It is further reasoned that if feed manufacturers were allowed to expand, they would over-expand, resulting in over-investment and financial loss to the feed manufacturers.

The two exceptions to this are Hokaido and Kyushu prefectures (states). The government claims that since production of dairy and beef in Hokaido and swine and broilers in Kyushu is conspicuously increasing, feed plant expansions will and have been approved for these two areas. Examples of feed plant expansions include Marubeni Livestock Company (group company of Marubeni Trading Company) and Zennoh expanding in Kyushu and Hokoren (a cooperative affiliated with Zennoh) expanding in Hokaido.

Industry sources agree that the government has given them administrative guidance concerning feed plant expansion as described above. However, people in industry feel that the licensing and administrative guidance is really of little value since the government is telling industry to do what it would do regardless of government regulations. One noted Japanese academician (16) concurred with this viewpoint but indicated that there were times in the past when industry probably needed administrative guidance.

As a result of relatively close ties between industry and government, it is probable that requests for licensing of new expansions are rarely turned down. This is primarily due to the administrative guidance which indicates current government policy and the discussions that would occur between the company and the government before the license request was submitted.

Mixed Feed Supply Stabilization Organization

Largely as a result of the uncertainty surrounding commodity supplies from 1972 through 1975, the MAFF formed the quasi-governmental Mixed Feed Supply Stabilization Organization (MFSSO) in 1975. The purpose of this organization was to stockpile feed grains in order to guarantee supplies in the event of relatively short-term international supply problems. A second purpose was to give the Japanese livestock farmer tangible assurance that feed supplies were secure. The original goal of the MFSSO was to encourage the feed industry to maintain a 1-month supply of feed grains for a total supply of 2 months. In order to realize these goals, the MFSSO also had to develop a program to stimulate silo construction.

Although the original goal of the MFSSO was to stockpile a 1-month supply of feed grains by 1978, that goal was later changed to a 1-month supply based upon 1975 monthly consumption. This would have required the stockpiling of 950,000 MT. However, as of December 1978, the MFSSO had stockpiled 300,000 MT of barley, 195,000 MT of corn, and 110,000 MT of sorghum for a total of 605,000 MT, which amounts to about a 2-week supply at 1979 consumption levels. It should be noted, though, that the barley is being stockpiled by the Food Agency, not the MFSSO.

The funding for the stockpiled grain is such that corn and sorghum are purchased with borrowed money and the interest on the borrowed money is paid by MAFF. Each company storing grain is paid a government storage fee which is also paid by MAFF. In order to guarantee that the stockpiled grain is not used by the feed companies to lower their inventory requirements of self-purchased grain, the MFSSO employs inspectors to check each company's grain stocks monthly. In addition to government stockpiled grain, each company is required to average over any 3-month period grain stocks equivalent to full capacity. Full capacity is defined as the average of the beginning grain stocks for every month for the previous 5 years. Penalties are assessed the companies that fail to maintain these grain stocks. The penal-

ty is 10% of the purchase price of the commodity times the volume of grain that is short.

In order to hold the stockpiled grain, additional storage facilities were needed. To stimulate construction of grain storage, interest on loans to companies building silos was subsidized by 1.95%. This interest subsidy was also financed by the government. However, the effect of the interest subsidy on the construction of silos is debatable (Table 26). From 1972 through 1975 (the period during which the world recession was the worst), silo capacity increased 16% while feed grain imports increased only 19%. From 1975 through 1977, the period during which the MFSSO had encouraged silo construction, feed grain imports increased 25% but silo construction was up only 14%. Those industries which control the silo facilities are listed in Table 27.

TABLE 26.—Change in Silo Capacity by Year, Japan, 1970-1978.

Year	Capacity	Increase	Total	Change
	Metric Tons			percent
1970	2,475,401			
1971		386,949	2,862,350	9.6
1972		436,997	3,299,347	10.9
1973		202,325	3,501,672	5.0
1974		154,284	3,655,956	3.8
1975		160,677	3,816,633	4.0
1976		197,989	4,014,622	4.9
1977	4,014,622	350,000*	4,360,000	8.7
1978	4,360,000			

*Estimated.
Source: (32).

TABLE 27.—Total Silo Capacity by Industry and Silo Utilization, Japan, 1978.

	Capacity (MT)	Percent of Total	Number of Companies
Handling silo	2,107,106	52.5	85
Flour mill industry	776,315	19.3	85
Feed mill industry	581,548	14.5	159
Oil industry	485,135	11.4	16
Others*	91,518	2.3	31
Total	4,041,622	100.0	
	Silo Utilization		
	Storage (MT)		**Percent of Total**
Corn and sorghum	2,239,058		55.4
Wheat and barley	1,023,728		25.5
Soybeans	517,372		12.8

*Barley processors, corn starch processors, and Miso-Soy sauce producers.
Source: (32).

FIG. 4.—Japanese Mixed Feed Price Stabilization Fund System for Reserving Monies, 1978.

JFMA Fund	Zennoh Fund
Producers pay 400 yen/ton	Producers pay 400 yen/ton
Member feed manufacturers pay 800 yen/ton	Perfectual Agricultural Cooperative pays 200 yen/ton
	Zennoh pays 600 yen/ton
(1200 yen/ton) (8.2 million tons)* = 9.84 billion yen†	(1200 yen/ton) (6.84 million tons)* = 8.2 billion yen†

*Contracted tonnage for 1978 is set up on a 3-year basis.
†Total reserve fund available in 1978.
Note: Zenraku fund is similar to Zennoh's. Zenraku had contracted tonnage of 720,000 tons.
Source: (60).

Mixed Feed Price Stabilization Funds

The Mixed Feed Price Stabilization Fund (MFPSF) was first established in 1974 by three feed industry organizations in order to help stabilize the then widely fluctuating formula feed prices. The three feed industry organizations were the Japan Feed Manufacturers Association (JFMA represents private feed manufacturers), Zennoh, and Zenraku.[12] Each organization has its own fund, although they each have a similar system for reserving money based upon contracted tonnage (Figure 4) (60).

Soon after the MFPSF was established, it became apparent that the industry fund alone would not be sufficient to stabilize formula feed prices under prolonged and unusually adverse conditions (60). Therefore, a quasi-governmental organization was formed, entitled the Organization of Mixed Feed Stabilization Fund (OMFSF). At the beginning of each fiscal year, the Japanese government allocates a certain amount of money to the OMFSF. The three privately organized funds are then obliged to reserve an equivalent amount of money in addition to their own stabilization fund. For example, in 1978, the government subsidy was 10.6 billion yen. The three industry funds then reserve their share (based upon contracted tonnage) of the 10.6 billion yen. For the JFMA, it would be 5.5 billion yen (52% of 10.6 bil-

[12]Zenraku means National Agricultural Associate of Dairy Producers, which manufactures feed. In this case, Zenraku is involved in the fund separate from Zennoh. Previous discussions concerning Zennoh have included Zenraku.

ion yen) (60). As of 1978, a total of 69.6 billion yen had been reserved (Table 28), with a goal of 80.0 billion yen by 1979.

If formula feed prices increase by more than 5%, industry funds will be used to stabilize the price. In case of price increases more than 8%, the OMFSF reserves will be used.

The important question to be answered is what the effectiveness of these funds would be in stabilizing prices. In August 1978, formula feed for broilers was selling for 1262 yen/20 kg or $315/MT (29). Now suppose the U. S. corn crop for 1 year was 20% smaller than the previous year's crop. This would result in an increase in the world price of feed grains that would translate into a 50% price increase for formula feeds in Japan, with the increase lasting 1 year. (There were price increases considerably larger than this in the 1973-1974 period.) This would result in a price of $472.50/MT (using the broiler feed price as an example) for formula feeds. Further assuming that formula feed production was that of 1977 or 19.5 million tons, the MFPSF and the OMFSF could reduce the price of feed by (80 billion + 18.9 billion yen[18])/19.5 million tons or 5071 yen/ton or $25/ton. The point is that if the price of feed grains increases as it did in 1973 and 1974, which prompted the establishment of the MFPSF and OMFSF, the ability of these funds to stabilize prices would be minimal.

Sales of Surplus Rice for Formula Feed

As a result of good weather and economic factors discussed in the previous chapter, Japan once again has a rice surplus problem. Accordingly, the Food Agency Director General has indicated that the government is considering a rice disposal plan designed to reduce rice stocks to a 2 million ton "normal" level. This would require the disposal of 4 million tons of rice over the next 5 years and will cost the government 2 trillion yen ($10 billion) to be financed over a period of 7 years. The rice would be disposed of in animal feed, industrial use, and as donations (Table 29).

The rice used in formula feeds will cut into feed grain imports. The rice will be used in all mixed feeds, but greater emphasis is expected to be placed on its use in swine and poultry feeds. According to the U. S. Attache's Office, rice has a lower feeding value than that of corn and sorghum, and therefore reductions in corn and sorghum are not expected to correspond directly to increases in rice use. Consequently if 500,000 tons of rice are disposed of in the formula feed industry, this would reduce demand for corn and sorghum by an expected 460,000 tons. However, if supplies and/or prices of feed grains become unstable in the world market in the near future, it would not be surprising if Japan utilized its surplus rice to stabilize formula feed prices. This would appear to be a more effective method than the present fund approach, although no Japanese government official has yet suggested this approach.

[18]80 billion yen is the size of the government fund and 18.9 billon yen is the size of the industry.

TABLE 28.—Japanese Mixed Feed Price Stabilization Fund Reserves, 1974-1979.

Year	Government Subsidy	Industry	Cumulative Total
	Billion Yen		
1974	6	6	12
1975	2	2	16
1976	6.6	6.6	29.2
1977	9.6	9.6	48.4
1978	10.6	10.6	69.6
1979	*	*	Goal = 80.0

*Not available.
Source: (60).

TABLE 29.—MAFF Planned Rice Disposal, 1978-1982.

Period	Feed	Aid Exports	Industrial Uses	Total
	1000 Metric Tons			
1978	290	230	60	580
1979	500	400	100	1,000
1980	500	400	100	1,000
1981	500	400	100	1,000
1982	210	170	40	420
Total	2,000	1,600	400	4,000

Source: (80).

TABLE 30.—Tariff Quotas and Import Duties for Industrial Use Corn, Japan, October 1977 - September 1978.

Usage	Oct. 1977 - March 1978	April 1978 - Sept. 1978	Import Duty
	1000 Metric Tons		percent
Corn starch	704.4	664.1	0
sweetening	485.3	448.0	0
non-sweetening	219.1	216.1	0
Alcohol	53.6	52.3	0
Corn flakes	8.1	6.9	0
Popcorn	2.4	2.4	0
Corn grits, meal, and flour	108.4	115.1	10
Other	13.9	13.7	10
Total	890.8	854.5	

Source: (78).

Tariffs and Other Import Controls on Feed Grains

Barley imports are controlled by the Food Agency. All other feed grains for feed use are imported free of controls. The importation of formula feeds, which was first scheduled for liberalization in 1972 and is not yet liberalized, has a duty of 15%.

In order to support domestic potato production and demand for potato starch, Japan sets quotas on industrial use corn. Corn imported within this quota is either not taxed or it is taxed at 10% ad valorem (Table 30). Corn imported in addition to the quota is taxed at 15,000 yen per ton which, if based on average CIF costs from January to June 1978, amounts to a 55% duty (79).

The Japanese Soybean Market

Soybeans have become a very important world commodity over the last 30 years. Their use has grown from that of a peculiar oriental food bean to a multitude of food, industrial, and feed uses. The increase in the consumption and uses of soybeans in Japan has paralleled its popularity in the rest of the world. This section discusses the uses for soybeans in Japan, the soybean crushing industry, Japanese soybean imports, and the government's presence in the soybean markets.

JAPANESE USES FOR SOYBEANS

Soybean Food Use Demand

For a long time the Japanese have consumed soybeans as a food and soybean-based foods are very much a part of the traditional Japanese diet. More recently, though, as the Japanese diet has undergone changes associated with increasing incomes and a changing culture, a continually greater proportion of the total soybean consumption has been in the form of soybean oil (used for cooking oil, salad dressing, etc.) and soybean meal (used primarily for livestock feeds) (Table 31). This is primarily a result of slower growth in consumption of soybean foods relative to livestock and other Western-style dishes for which younger Japanese have developed preferences. This trend would be expected to continue except that consumption of soy protein as an extender in meat and fish products is expected to increase in coming years.

There are hundreds of different traditional soybean foods in Japan. The consumption of some of the primary soybean foods and the origin of the beans for each use is given in Table 32.

Demand for Soybean Meal

The primary cause for the dramatic increase in the use of soybean meal (SBM) has been its increased use in formula feeds (Table 13) (from 6.6% of all formula feeds in 1963 to 11.1% in 1977) and the increased use of formula feeds. The reasons for the increased use of formula feeds were explained in the previous section. One of the reasons given for the increase in the use of feed grains as a percentage of total formula feed production was the need for higher energy feeds in order to grow out the livestock faster. However, in order for the higher energy content of the feed to be utilized by the animal, the feed must contain more protein which the SBM provides.

In theory there are numerous oilseed meals that substitute for SBM. These would include the meals obtained from crushing rapeseed, cottonseed, sesame, peanuts, safflower, copra, and linseed. However, in

TABLE 31.—Soybean Consumption by Use, Japan, 1955-1978.

Year	Change in Stocks	Total Supply	Crushed	Use	Food Use of Total	Feed, Seed, and Waste
	1000 Metric Tons				percent	
1955-1960 (av)	+ 2	1338	816	495	37*	27
1961-1965 (av)	+17	1972	1218	556	31	18
1966-1970 (av)	+10	2671	1997	641	24	33
1971-1972 (av)	+22	3409	2653	716	21	40
1973-1974 (av)	—52	3617	2848	723	20	46
1975	—42	3502	2721	735	21	46
	Actual Stock Level					
1976	360†	3552	2762	746	21	44
1977	284‡	3789	2973	768	20	48
1978	330	4115	3268	797	19	50

*Estimated
†Includes 38,000 MT government stockpile.
‡Includes 70,000 MT government stockpile.
Sources: (36, 68, 69, 78).

TABLE 32.—Japanese Food Use of Soybeans and Origin.

Food	Approximate Consumption	Traditional Sources
	Metric Tons	
Miso	200,000	Traditionally, Peoples Republic of China (PRC) beans have been preferred for this market. However, PRC has not been able to supply this market Therefore, recently, sizeable U. S. shipments of Amsoy and Sorsoy beans from Illinois, Iowa, and Minnesota have moved into this market.
Tofu Foods	300,000	The sources for these beans are and have been U. S #2 beans that have been cleaned and sorted for uniformity. IOM (Indiana, Ohio, and Michigan) beans have been preferred in this market.
Niamame	60,000	Domestically produced soybeans are preferred for Niamame due to taste and texture.
Others	180,000	The U. S. also has been supplying this market This is almost a requirement since beans are not really available anywhere else However, there haven t been any serious complaints on the U S bean quality.

Source: (83).

practice and in fact, the use of these meals as a substitute for SBM is limited. Most of these meals have nutritional characteristics that limit their use in formula feeds.

SBM is the "best" protein supplement available for livestock feeding. It is better because it has the proper amino acid balance needed by livestock, and because once it is processed it contains no growth inhibitors or other biochemical properties that might limit its use. In fact, the amino acid balance in SBM is especially well suited to use in livestock feeds because it complements the amino acid balance of most feed grains, especially that of corn. The one oilseed meal that can be considered a substitute for SBM is rapeseed meal and this has occurred only recently since the Canadians have developed new varieties which do not have nutritional drawbacks. However, even the new varieties of rapeseed which have been used in the last few years cannot entirely replace SBM in formula feeds (Table 33).

The single most important substitute for SBM in Japan is fish meal. In recent years it has represented about 3% of the total formula feed production. The Boston Consulting Group in a study of formula feed composition in Japan noted that fish meal use over the last 15 years exhibited relatively constant levels and appeared not to be influenced by price movements (61). This is primarily the result of specifications set by the Japanese law (60). Once again, the substitutability of fish meal for SBM is not complete.

Most of the attention is not on fish meal replacing SBM in formula feed but vice versa due to tonnage limitations and new restrictive offshore economic zones placed on the Japanese fishing fleet. One Japanese government official claimed that the 200-

TABLE 33.—Demand and Supply of Soybean Meal, Fish Meal, and Rapeseed Meal, Japan, 1976-1978.

Year	Beginning Stocks*	Production	Imports	Total Supply	Compound Feed	Other Use†	Exports
	1000 Metric Tons						
Soybean Meal							
1976	85	2052	193	2330	1873	347	0
1977	110	2225	314	2649	2132	419	0
1978‡	88	2492	385	2965	2400	450	0
Fish Meal§							
1976	46	805	57	908	748	64	49
1977	47	605	178	830	682	59	37
1978‡	52	630	115	797	675	50	27
Rapeseed Meal							
1976	11	358	14	383	124	237	0
1977	22	426	24	472	168	284	1
1978‡	19	447	30	496	130	345	0

*Oilseed meal stocks at crushers and feed manufacturers, fish meal stocks at feed manufacturers only.
†Includes meal consumed as food, fertilizer, etc.
‡1978 is the estimate of the Agricultural Attache (Japan) as of October 1978.
§Includes fish solubles dry wt basis: dry wt = 50% solubles.
Source: (80).

mile limit will not affect fish meal production because the type of fish used in fish meal is not caught in those waters. Others have argued that this is not the case (78). Thus far it does not appear that the 200-mile limit has greatly affected total fish meal supplies, but no one is suggesting that fish meal use in formula feeds will increase at the expense of SBM.

According to MAFF statistics, per capita edible vegetable oil consumption in 1977 was 11 kg compared to 25 kg in the U. S. Liquid oils, excluding castor and linseed oils (which are used in some industrial processes), are refined for edible use as salad and cooking oils and this is also the predominant use for soybean oil (SBO). Palm and coconut oils are primarily used in margarine and shortening manufacture and in industrial processes (Table 34).

As with SBM, in many cases SBO does not have an exact substitute. People accustomed to food cooked in one oil often develop a preference for that oil. However, SBO for cooking purposes is tasteless (in contrast to most vegetable oils) and once people are accustomed to food cooked in SBO, they have a distinct preference for SBO. Rapeseed oil is the second most consumed oilseed oil. Palm oil is the second most used oil, but is not an oilseed oil. Palm oil has been quite successful in penetrating the solid vegetable oil market. Yet, because of refining costs, palm oil is expected to remain non-competitive in the larger liquid oil market (of which SBO is a part) in the foreseeable future.

SOYBEAN CRUSHING INDUSTRY

Since about 85% of the soybeans imported into Japan are crushed, the soybean crushing industry plays a critical role in the soybean market. The dramatic increase that was witnessed in the production of formula feeds has been seen in the oilseed crushing industry (Table 31). Likewise, the changes in the number of plants and plant capacities have been accompanied by a trend toward larger and larger plants. The soybean processors, capacity locations, and storage capacities are listed in Table 35. The companies that are members of Sogo Shoshas are listed, although it is likely that others not listed as members are members of Sogo Shoshas. Due to difficulty in obtaining such information, this could not be confirmed. A large number of smaller plants (which number approximately 150) that primarily process food soybeans are not included in Table 35. In 1976, the 6 largest processors of soybeans crushed 50% of the total soybeans crushed and the 12 largest crushed approximately 70% of the total. This illustrates the concentration within the industry.

There have been a number of reasons for a continuing trend toward increased concentration. First of all, as was the case in the formula feed industry, the larger companies with better management and access to capital expanded faster by building new, larger, more efficient plants when the market in general was expanding rapidly. The trend toward building new and larger plants accelerated as the companies moved their plants from inland to coastal locations to take advantage of transportation efficiencies there. This growth in capacity came to a halt with the recession of 1974 and the realization by the industry and government that the industry was overbuilt.

In the early 1960's, the government instigated a pricing policy for SBM such that every 3 months the soybean processors and users (primarily feed manufacturers) collectively bargained and set the SBM

TABLE 34.—Demand and Supply of Soybean Oil, Rapeseed Oil, and Palm Oil, Japan, 1976-1978.

Year	Beginning Stocks	Production	Imports	Total Supply	Consumption	Exports
	1000 Metric Tons					
Soybean Oil						
1976	47	485	12	544	512	2
1977	30	532	0	562	547	1
1978	14	585	0	600	582	2
Rapeseed Oil						
1976	19	262	14	295	281	1
1977	13	307	8	328	319	2
1978	17	330	15	352	337	3
Palm Oil						
1976	20	0	153	173	153	0
1977	20	0	147	167	147	0
1978	20	0	125	145	125	0

Source: (80).

prices for the next 3 months. The soybean processors contracted their soybean purchases on the basis of expected sales, and therefore knew exactly what the ingredient costs would be prior to the meetings. Also, a part of the mutual understanding between the processors and feed manufacturers was the agreement that the feed manufacturers would buy their SBM from the processors and the processors would guarantee the feed manufacturers a supply of SBM.

This system worked well until 1975. In 1973, when the prices of soybeans started to escalate, the soybean processors' profits climbed as a result of buying cheaper soybeans (which were purchased 3 months earlier) and selling them in a higher priced meal market. The resulting problem was that in 1974 and 1975, when the prices of soybeans in the world market dropped, the soybean processors were "stuck" with very high priced soybeans and a declining meal market. As a result of this situation, the soybean processing industry lost $250 million in 1975 and collective bargaining between the oil processors and the feed manufacturers came to an end. The losses were aggravated by the fact that, prior to the time of the soybean price declines, the government was encouraging soybean processors to keep full inventories of soybeans in light of uncertain commodity markets in order to guarantee an adequate supply. Additionally, the recession had hurt demand and price for oil products.

The aftermath of 1975 has been a pricing and sales system for SBM very similar to the U. S. system. The oil processors are fully hedged in the futures market and each feed manufacturer contracts individually with soybean processors for purchases of soybean meal 1 to 2 months in advance. The price of soybean oil is discussed by supply-demand relationships.

As has been mentioned before, it is Japanese trade policy to import only raw materials and to do all of the processing in Japan. This policy also applies to soybeans. Soybeans are imported to be crushed in order to meet the lesser of the two demands—either oil or meal. Historically, the lesser demand has been for oil. Therefore, soybean crushers import enough soybeans to meet their SBO market and then meet the excess demand for SBM through imports of meal. Since this is in fact what is happening, it is possible to conclude that the following equation must hold:

TABLE 35.—Japanese Soybean Crushers: Crushing and Storage Capacities—1978.

Name of Company (Sogo Shosha)*	Daily Crushing Capacity (MT)	Location of Plant	Soybean Storage Capacity (MT)	Silo Location
Nisshin Oil Mills, Ltd.	3,900	Yokohama	100,150	Yokohama
(Mitsubishi)		Kobe	5,240	Kobe
Showa Sangyo Co., Ltd.	1,800	Kashima	45,700	Kashima
		Yokohama	55,000	Tsurumi
		Kobe	116,000	Kobe
Hohnen Oil Co. (Mitsui)	1,500	Shimizu	65,902	Shimizu
			9,740	Sakaide
Yoshihara Oil Mill, Ltd.	1,500	Nishinomiya	18,900	Nishinomiya
(Sumitomo)			20,092	Kobe
Nihon Koyu Co., Ltd.	1,500	Mizushima	55,000	Mizushima
Japan Soya Products Co., Ltd.†	1,500	Kobe	55,000	Kobe Kobe
Nikka Fats & Oil Co., Ltd.	900	Wakamatsu	12,280	Wakamatsu
Rinoru Oil Mills Co., Ltd.	880	Nagoya	47,820	Nagoya
Fuji Oil Co., Ltd. (C. Itoh)	860	Kobe	4,010	Kobe
Ajinomoto Co.	840	Yokohama Izumisano	27,420	Yokohama
Toyo Oil Mills Co., Inc.	800	Chiba	59,000	Chiba
Kato Oil Mill Co., Ltd.	488	Tamano	7,000	Tamano
Yokkaichi Oil and Fats Co.	230	Yokkaichi	5,060	Yokkaichi
Asahi Yushi Co., Ltd.	215	Asahikawa		
Totals	16,913		709,314	

*The companies associated with a Sogo Shosha are listed as such. However, due to difficulties in obtaining such information, other companies listed may belong to one but are not marked.

†Japan Soya Products is operated jointly by Yoshihara Oil and Hohnen Oil.

Sources: (2, 15, 62).

Japanese Soybean Import Price/Unit =
Value of SBM from a Unit of Soybeans +
Value of SBO from a Unit of Soybeans —
Crusher's Margin on that Unit of Soybeans.

SOYBEAN IMPORTS

Soybean imports are more difficult to analyze than are feed grain imports because of the multiple primary products obtained from soybeans. Soybeans are really a part of three different markets—food, SBM, and SBO. The SBM and SBO markets are a part of larger world markets for high protein meals and fats and oils, respectively. This being the case, a study of the soybean market would normally require an analysis of the soybean, SBM, and SBO imports. Fortunately, Japan imports soybeans almost exclusively to meet the lesser demand for either SBM or SBO. This fairly unique situation makes the study of the soybean import market much more simple than it might otherwise have been.

The Japanese policy of importing soybeans for processing is documented in Table 36. In 1978, SBM imports represented an all-time high 9% of the total soybean imports. From 1955 through 1978, SBM imports averaged 3.2% of total soybean imports. As would be expected, SBM has been the product most often in excess demand. Likewise, soybeans in most years have been imported to meet the SBO demand and SBO supply actually exceeded demand by an average of 6,000 MT/year since 1955. However, in 1975 the opposite was true when 30,000 MT of SBM were exported and 14,000 MT SBO were imported. These quantities represented about 1% of the soybeans imported in that year.

The rapeseed and palm oil imports have increased considerably (Table 36). These two imports are important because palm oil competes only in the oil market and rapeseed competes with soybeans to a greater extent in the oil market than in the meal market. The reason for this is that the oil extraction rate of rapeseed is approximately twice that of soybeans. This means that for each ton of rapeseed imported, 2 tons of soybeans are not imported. This situation in which there are more competitive substitutes in the oil market than in the protein meal market (the only real substitute for SBM besides rapeseed meal is fish meal and its limitations were discussed in the previous section) may be the primary reason for increased Japanese SBM imports. This being the case, there is every reason to believe that this trend will continue in the foreseeable future.

One additional factor affecting the size of the SBM or SBO imports is the crushing rate or extraction rate of the oil. In 1976 soybeans crushed in Japan yielded about 18.1% oil. In 1977 the yield was 18.5% and this increased yield "saved" the crushers from importing an additional 61,000 MT of soybeans and contributed to increased SBM imports by 50,000 MT.

Since Japan primarily imports soybeans, the rest of this discussion will concentrate on soybean imports. The flow of soybeans into Japan is depicted in Figure 5. The dark lines show the primary flow of soybeans which is evidenced by the fact that 11 of the largest trading companies imported 100% of their soybeans from the U. S. in 1974-75 (Table 37). This reintroduces the question as to why the soybean crushers do not buy direct from the international grain companies. The answer to this question is essentially the same as that given by the feed manufacturers.

As was the case with feed grains, one reason given by an oilseed crusher for purchasing soybeans

TABLE 36.—Soybean, Soybean Oil, Soybean Meal, Rapeseed, and Palm Oil Imports, Japan, 1955-1977.

Year	Soybean Imports	Soybean Oil Imports*	Soybean Meal Imports*	Rapeseed Imports	Palm Oil Imports
			1000 Metric Tons		
1955	808	—7	14	28	32
1960	1128	—21	1	55	13
1965	1847	—5	46	108	16
1970	3244	—9	72	345	40
1972	3396	—3	52	614	59
1973	3635	—3	275	693	100
1974	3244	18	108	679	115
1975	3334	14	—30	669	108
1976	3554	10	193	726	153
1977	3602	—1	317	776	147
1978†	4200	—2	385	795	125

*These figures represent net imports (i.e., imports — exports).
†These figures are estimates by the Agricultural Attache (Japan) as of October 1978.
Sources: (67, 80).

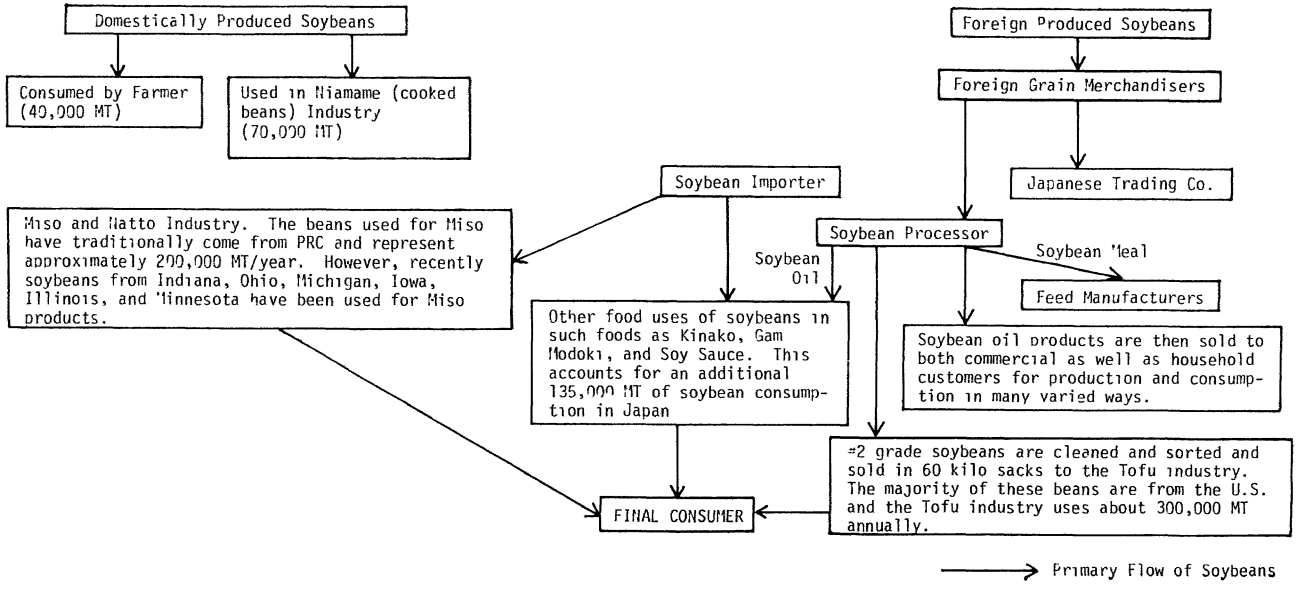

FIG. 5.—The flow of soybeans and soybean products in Japan.

TABLE 37.—Japanese Soybean Imports from the United States by Importer and by Crushing Firm, Oct. 1974-Sept. 1975 (Shipment Basis).

	Importer											
User	Mitsui	Mitsubishi	C. Itoh	Marubeni	Nissho Iwai	Sumitomo Shoji	Yuasa	Nichimen	Toshoku	Kanematsu	Tomen	Total
	1000 Metric Tons											
Honen	150.5				53.0	16.7			57.7		10.1	288.0
Nisshin	101.8	145.0		12.5	10.7					44.2		314.2
Ajinomoto	51.8	45.9	254.0	22.2	36.6							410.5
Showa Sangyo	15.5		181.4		34.7	34.7	132.3					398.6
Yoshihara	62.6	57.2			40.4	49.2						209.4
Nikko				246.4								246.4
Renol		185.4										185.4
Nikka								114.6				114.6
Yotsuyu										38.0		38.0
Fuji			30.8		1.0							31.8
Kato	11.7				5.5				6.9		3.7	27.8
JSP	118.5				93.8	76.4			34.2		21.2	344.1
Others	1.5		1.1						1.0			3.6
Sub-total	513.9	433.5	467.3	281.1	275.7	177.0	132.3	114.6	99.8	82.2	35.0	2,612.4
Food Use	11.8	85.2	1.1	60.4	15.6		25.5	10.1	2.3		2.7	214.7
Total	525.7	518.7	468.4	341.5	291.3	177.0	157.8	124.7	102.1	82.2	37.7	2,827.1

Source: (45).

TABLE 38.—Soybeans: Unit Values and Freight Rates at Various Marketing Levels from U. S. Farmers to Japanese Importers, Marketing Years 1969-70 to 1974-75.

Item	69-70	70-71	71-72	72-73	73-74	74-75
	Dollars/Metric Ton					
(1) Unit value received by U. S. farmers*	86.35	104.72	111.33	160.57	208.70	244.71
(2) Implicit U. S. inland freight	+10.93	+6.43	+7.91	+11.31	+21.50	+22.09
(3) Total U. S. export unit value of soybeans	97.28	111.15	119.24	171.88	230.20	266.80
(4) U. S. export unit value to Japan	97.29	119.71	110.71	189.64	241.35	270.10
(5) Ocean freight to Japan	10.98	9.26	4.99	11.59	25.02	12.67
(6) Japanese import unit value†	106.65	123.40	136.19	170.26	259.96	300.57
(7) Unexplained difference	—1.62	—5.57	+20.49	—30.97	—6.41	+17.80
(8) Japanese import unit value lagged 2 months	107.52	125.11	137.90	184.30	259.22	297.76
(9) Unexplained difference	—0.75	—3.86	+22.20	—16.93	—17.15	+14.99

*The unit value is the weighted season-average price.
†In Japanese yen, 1969-70, 38,366; 1970-71, 44,389; 1971-72, 43,513; 1972-73, 48,362; 1973-74, 72,222; 1974-75, 88,890.
Note: Lines 3, 7, and 9 have been developed from the information in the table as follows:

Line (3) = (1) + (2)
Line (7) = (6) — [(4) + (5)]
Line (9) = (8) — [(4) + (5)]

Source: (7).

from the trading companies was the lower prices offered by the Japanese traders. The trading companies consistently argued that the lower prices were the result of the tough competition in the Japanese market. This argument is supported in a study by Collins (7) which showed that the "unexplained difference"[14] was an average —$1.05 from 1970 through 1975 (Table 38). If the Japanese unit values are lagged 2 months, the averaged unexplained difference from 1970 through 1975 is —$0.25. Also, as was the case with corn, the Japanese import prices showed an unexplained difference $0.98/year lower than the unexplained difference in Dutch imports. This information is very supportive of the argument that the import market for soybeans as well as feed grains is extremely competitive in Japan.

[14] 'Unexplained difference" is obtained by subtracting the Japanese import unit values from the U. S. export unit value to Japan plus ocean freight.

U. S. POSITION IN THE JAPANESE SOYBEAN MARKET

Japanese dependence upon the U. S. for essential agricultural products is nowhere better illustrated than in its dependence upon the U. S. for soybeans (Table 39). The annual U. S. market share of the Japanese soybean market has consistently been above 90%; in 1977 it was 95% and was estimated to be more than 97.5% in 1978 (78). This increasing dependence upon the U. S. has come about during a decade in which Japan has been actively promoting and stressing supplier diversification.

The U. S. has two primary competitors in this market—China (PRC) and Brazil. Historically, the

TABLE 39.—Japanese Soybean Imports by Country of Origin, 1960-1977.

Year	China (PRC)	Brazil	Others	U.S.A.	Total	U.S.A.
	1000 Metric Tons					percent
1960	0	11	26*	1,091	1,128	97
1963	227	0	3	1,314	1,544	85
1965	376	0	6	1,465	1,847	79
1968	417	0	2	2,001	2,420	83
1970	291	0	1	2,952	3,244	91
1971	283	0	2	2,927	3,212	91
1972	254	15	1	3,126	3,396	92
1973	226	188	11	3,210	3,635	88
1974	232	82	6	2,924	3,244	90
1975	240	43	10	3,041	3,334	91
1976	133	126	8	3,287	3,554	92
1977	98	58	18	3,428	3,602	95

*Kenya exported 20,000 MT to Japan.
Source: (38).

PRC has been the chief competitor and since 1962 has had an official agreement with Japan to supply annually designated quantities of soybeans. These soybeans have largely been used in the food (Natto and Miso) industry and have been preferred for that use over other soybeans. However, there have been several developments that have caused a decline in China's market share. First, and probably most important, is the fact that the PRC is not really in a position to export soybeans because the soybeans are needed by the Chinese. Although this does not mean that the PRC will stop exporting soybeans, it probably does mean that the recent decline in their market share will continue.

Furthermore, the Japanese are not now so willing to pay the Chinese the high premium that Chinese soybeans have commanded in the past. The reason for this is that U. S. beans, particularly the Amsoy and Sorsoy varieties of beans grown in Illinois, Iowa, and Minnesota, have proven to be good substitutes for the Chinese beans in Miso. As is the case with many foods, consumer taste preference for Miso is such that consistency in taste is preferred. Therefore, as Japanese consumers get used to Miso from U. S. beans, they will probably develop a preference for that taste. Most of the soybeans used for Miso have been supplied by a Mitsui-owned elevator in Farmer City, Ill., and were shipped with the identity preserved.

On the topic of food soybeans, an expert on the Japanese food soybean market (84) has expressed regret over what he termed a "lack of comprehension" on the part of the U. S. and the potentially misleading articles that have appeared in the U. S. recently. The general nature of the articles has been that the U. S. should do more in the way of research on new varieties to capture the Japanese food soybean market. This concept demonstrates a misunderstanding of the situation since the U. S. already controls approximately 85% of the food market and has had a large portion of that market for some time. Also, there is every indication that the preference for Chinese beans has weakened considerably (68, 74, 84). Finally, regardless of economics, taste, or other considerations normally made in the purchase of soybeans, if China offers to sell Japan some quantity of soybeans, Japan will in all likelihood purchase all that China has to sell, if only for political reasons. Japan does not want to offend China and it has a diversification of supplier policy to maintain.

The other major U. S. competitor in this market, Brazil, is relatively new. Brazil first started to sell soybeans regularly to Japan in 1972. In spite of all the acclaim that Brazilian beans have received, they will not move into the Japanese market in sizable quantities unless the Japanese government forces them on the crushers and this does not seem likely at present. There are four reasons for this. First, freight rates from Brazil to Japan are significantly higher than from the U. S. to Japan and this results in Brazilian beans being higher priced and thus not competitive in the Japanese market. Second, soybean crushers prefer U. S. soybeans because Brazilian beans have a red cast to them which the Japanese are not accustomed to and do not like. Furthermore, as a result of longer shipping time spent at hot equatorial temperatures, there is more heat damage to the Brazilian beans. Finally, traders contend there is more uncertainty connected with the scheduled arrival of purchases of Brazilian beans due to problems with the weather, the poor inland transportation system, and the Brazilian government. This is particularly a problem in the Japanese market because, as noted earlier, the Japanese have minimal storage facilities and planned shipments must arrive on schedule.

The fact that Brazilian beans are not competitive in the Japanese market does not imply that Brazilian production of soybeans does not affect this market. Brazilian soybeans affect it more indirectly than directly through the effect Brazilian beans have upon world supply-demand for soybeans and the world price.

On the topics of dependability, quality, ability to meet contracts, and other non-price decision criteria related to the purchase of soybeans, there is no argument that the U. S. is excellent.

With respect to the applicability of the government's diversification policy to soybeans, Japan is really faced with a world market in which to a large extent the U. S. is the major supplier of soybeans and the government admits this to be a "fact of life."

JAPANESE PRIVATE SECTOR OVERSEAS INVESTMENT PROJECTS CONCERNING SOYBEANS

Although no large scale agricultural production-for-export projects have been started to produce exclusively soybeans, at least 12 Japanese companies have invested in overseas projects which affect the soybean market (Table 40). These investments have been primarily in Malaysia and the Philippines in palm oil refining and copra crushing facilities, respectively. Two investments were made in Canadian rapeseed crushing facilities and one in a Brazilian soybean crushing plant. The effects of these investments upon the soybean market are indirect via a reduced demand for soybean oil, but are potentially significant since the Japanese investors have made commitments to purchase large quantities of the oils produced (76).

TABLE 40.—Japan's Overseas Projects Involving Fats and Oils, April 1976.

Name of Project	Capital	Shareholding	Percent	Factory	Plans	Capacity
Malaysia International Palm Oil Industries	Malaysian $7.0 mil	Pelnas Nihon Yushi Marubeni	51 25 24	Port Klang Panda Malang	Palm oil refining, manufacturing of various kinds of edible oils and distribution	4,000 MT/month
Felda Oil Products	M. $14.0 mil.	Felda Mitsui Asahi Denka	66 24 10	Johore	Palm oil refining and distribution	3,000 MT/month
Palm Oil Product, Malaysia	M. $4.6 mil.	Tolenganu Developers General C. Itoh Fuji Seiyu	33 32 18 17	Fenggann	Palm oil refining	3,000 MT/month
Malaysia Vegetable Oil Refinery	M. $4.0 mil.	International Maritime Corp General Mitsubishi Kao Soap Kaneka Nisshin Oil	40 20 10 10 10 10	Johore	Palm oil refining and distribution	5,000 MT/month
Hume Edible Oil, Ltd.*						
Ben Hwa New Ind., Ltd.†						
Palmco, Inc.	M. $1.0 mil.	Mitsubishi Kopel Inc.	80 20	Portland US	Palm oil refining and distribution	6,000 MT/month
Legaspe Oil Co., Inc.	Pesos 31 mil.	Araya Financial Clique Mitsubishi Mr. Lim	60 30 10	1. Davao 2. Legaspe 3. Cagayandeolo	‡	1. 300 MT/day 2. 350 MT/day 3. 300 MT/day
Southern Island Oil Mill Corp.	Pesos 12.5 mil.	Aboitis San Miguel General Fuji Seiyu C. Itoh	35 20 10 22	Legaspe, Mindanao Macati, Mindanao	Copra crushing	400 MT/day
Illigan Coconuts Ind., Inc.	Pesos 20.0 mil.	Ludon Jardin Davis Bogo Medelin Mil. Nichimen General	30 20 10 10 30	Illigan, Mindanao	Copra crushing and distribution	90,000 MT/year
Mindanao Coconuts Oil Manufacturing Corp.§	Pesos 10.0 mil.	Interco Marubeni	25 25		Copra crushing and distribution	250 MT/day

*Sumitomo Shoji obtained rights of palm oil sales to markets in U. S. and Japan in December 1975 from Hume Edible Oil, Ltd., no investment. Hume Edible Oil, Ltd., is a subsidiary of Hume Industry Malaysia (HIM) which invests in palm oil refining in Malaysia. HIM's capacity is 6,000 MT a month.

†Sumitomo Shoji obtained 20% of Ben Hwa New Industries' stocks in November 1975. Location of head offices and factory in Benhoa, Singapore. Refining palm oil, palm kernel oil, and coconut oil. Capacity: 1,500 MT/month.

‡Mitsubishi Shoji has right of sales of 200,000 MT coconut oil and 100,000 MT copra meal in international markets. In 1974 Mitsubishi Shoji obtained 84% of American Jerome Family's stockholdings.

§Even though this corporation is registered, this is not established yet. Date of materialization unknown. Location of factory is also unsettled. Interco (International Copra Export Corporation)—25% shareholders—is the largest copra exporter in the P. I. and has 11 offices all over the islands. Interco was planning to build a copra crushing factory of 300 MT/day capacity by the end of 1976.

TABLE 40 (continued).—Japan's Overseas Projects Involving Fats and Oils, April 1976.

Name of Project	Capital	Shareholding	Percent	Factory	Plans	Capacity
Camauta Vegetable Oil, Ltd.	US $96 000	P T Kamauta	49	Amlan, Celebes	Copra crushing	100 MT/day
		Mitsubishi	17			
		Kao Soap	17			
		Kisshin Oil	17			
United Oilseed Product, Ltd.	Canada $2 5 mil.	British Columbia Packers	33 3	Lloydminster, Alberta	Rapeseed crushing	600 MT/day
		United Grain Growers	33 3			
		Mitsubishi	23 3			
		Nisshin Oil	10 0			
Alberta Foods Product	Canada $3 0 mil.	Alberta Wheat Pool	60	Fort Saskatchewan	Rapeseed crushing	600 MT/day
		C Itoh	15			
		Ajinomoto	15			
		Showa Sangyo	8			
		Fuji Seiyu	2			
Canbra Foods Ltd **				Lethbridge		
Canadian Seed Processor††						
Industrial E Commerio Brazileila, S. A	Cruzeiro 17 7	Sia De Industrial Gelais Abras E Terras‡‡	52	Canoas, Rio Grande do Sul	Soybean crushing, refining, and others	820 MT/day
		C Itoh	17			
		Ajinomoto	14			
		General	17			

**Nissho Iwai obtained 8% of Canbra Foods, Ltd stocks, capital of which is $3 2 mil and capacity of 1,000 MT a day Nissho Iwai s plan is to import 10% of crude oil produced by C F

††Mitsui Bussan last year reached an agreement with Canadian Seed Processor to attain the First Preference of Sales C S P is a subsidiary of Saskatchewan Wheat Pool

‡‡Sia De Industrial Gelais Abras E Terras was originally a construction company Entered into the oil business in 1951.

Source (45).

GOVERNMENT PRESENCE IN THE SOYBEAN MARKET

Crushing Industry Expansion Policy and Administrative Guidance

The Ministry of Agriculture, Forestry and Fisheries (MAFF) does not control crushing plant expansions by licensing, but rather utilizes administrative guidance. As was the case in the formula feed industry prior to 1973, there is no government policy on soybean crushing plant expansions. However, large capacity increases from 1965 through 1974, in expectation of large future demand coupled with the recession and large losses by the crushers in 1975, resulted in an industry-wide over-capacity situation.[15] At this point the government made it clear that it would not approve any new facilities unless they were replacing old plant capacity that was to be torn down. Since 1973-74, this government administrative guidance has been followed, but there are distinctly two different viewpoints of the administrative guidance—a government one and an industry one.

The government claims that its administrative guidance regarding expansion by the crushing industry was needed because of the obvious over-expansion. Also, it claims that it is not necessary to have a licensing system because of the indirect enforcement. The indirect enforcement is primarily in two forms. First, the companies follow the guidelines because they do not want to be criticized by others for not doing so. Secondly, if a crusher decides to build a new plant without the government's approval, it is likely that the company will not be able to borrow the needed capital from a bank. Typically, as a result of the close business-government relations, a bank would see a non-approved project as a bad risk and vice versa. One government official did mention, though, that if a soybean processing company requested approval for a plant expansion without replacing an old one at this time (December 1978), it would probably be approved by the MAFF since most of the plant capacity at present is being utilized.

To the contrary, some industry sources argue that the MAFF administrative guidance on plant expansion is really not relevant to company decision makers for a number of reasons:

- The government is lenient in calculating capacity of scrapped plants which were only on the books but not in use.
- Plants can manipulate capacity figures of existing facilities.
- It is true that the companies cannot obtain loans from government designated banks which typically have a slightly lower interest rate. However, it is possible to obtain capital from commercial banks (and Sogo Shosha banks) as long as the project is sound and the company's credit is good.
- It is possible to increase present facilities as long as no new plants are built.

It appears that some industry spokesmen feel that the government was partially responsible for the large losses in 1975 because the industry was following government wishes at that time which compounded the problems (and losses). It also needs to be pointed out that other sources confirmed that the government has very little capacity information on the companies, which makes it difficult for the government to administer this type of guidance. Finally, some members of the industry argue that a basic change has occurred since the years following World War II in that as industry growth and financial strength are increasing, government influence is declining.

The true situation exists between these two viewpoints. It appears that the administrative guidance on expansion has largely been followed because it was good sound advice. However, if the crushing industry had desired to expand contrary to MAFF wishes, it appears that the government would have had much more difficulty enforcing these guidelines than it would in the formula feed industry.

Soybean Supply-Demand Conference[16]

The Soybean Supply-Demand Conference is a conference of government officials, soybean crushers, oil processors, and formula feed manufacturers. The purpose is to determine the demand for SBM and SBO in the coming year and thus the amount of soybeans that will be imported to meet the lesser of the two demands. The demand estimates are generally low because the industry people at the conference tend to be conservative. Also, since the soybean trade is free, companies may import soybeans to meet the demand. Therefore the Soybean Supply-Demand Conference really has very little effect on the marketplace or the operation of the companies.

Soybean Supply Stabilization Association

As a result of the tripling of soybean prices in 1973 and the U. S. soybean embargo, the Japanese government established the Soybean Supply Stabilization Association (SSSA) as an incorporated entity December 26, 1974. The purpose of this organization was to stabilize the price and supply of soybeans

[15] In contrast to the formula feed industry, the capacity figures for the soybean crushing industry are based upon 24 hours of operation.

[16] The information contained in this section was primarily obtained during an interview with an industry spokesman who is in charge of purchasing ingredients for one of the large Japanese soybean processors.

and in so doing to stabilize the economic life of the Japanese people.

The program became functional in 1975 when the SSSA purchased 20,000 MT of soybeans for traditional foods. In 1976 the government revised the policy to stockpile soybeans not only for traditional foods but also for crushing, and authorized the SSSA to stockpile up to 50,000 MT in 1976. However, no new soybeans were purchased and stockpiled in 1976. In 1977, SSSA's plan was to have stockpiled a total of 70,000 MT. The SSSA purchased 49,560 MT of soybeans in 1977 and as of December 1977 had 69,560 MT of soybeans stockpiled. These beans were bought with borrowed money on which the MAFF through the SSSA pays the interest charges. Furthermore, in 1977 the SSSA was charged by the MAFF to research the effect the stockpiling of soybeans would have on the quality of the beans.

According to the SSSA (58), when the price of soybeans becomes abnormally high, the stocks of soybeans will be released. The price of the released beans will depend upon the purchase price, world price, exchange rates, and the general economic situation. All soybeans stockpiled were stored in silos belonging to the crushing industry which are paid a storage fee and each company is assigned a certain quantity (Table 41). The companies are then inspected periodically to make certain that they are not using the stockpiled beans. The original SSSA plan was to gradually increase the volume of stockpiled beans up to a total of 300,000 MT by 1981. This seems very unlikely at present. Besides insufficient financial resources, the crushing companies all claim that 70,000 MT is the limit that they will store. A lack of sufficient storage would certainly be a problem if the SSSA should attempt to increase the quantity stockpiled.

A breakdown of the SSSA budget (Table 42) gives some insight into the approximate costs of this stockpiling program. The stockpiled soybeans represent a 6-day supply of soybeans. It would appear that the ability of this soybean stockpiling program to stabilize the price of and supply of soybeans in the face of world shortages is insignificant.

TABLE 41.—Location of SSSA Stockpiled Soybeans by Company, Japan, 1978.

Name of Company	Location	MT of Soybeans Stored
Ajinomoto and Toyo Seiyu	Chiba	10,600
Nisshim Seiyu	Yokohama	11,700
Showa Sangyo	Kashima	3,365
	Kobe	5,895
Nihon Koyu	Mizushima	6,500
Hohnen Seiyu and	Nihon Diazu Seiya	3,000
Yoshiwara Seiyu	Zennoh Silo	3,000
Hohnen Seiyu	Shimizu	5,600
Yoshiwara Seiyu	Kobe	5,500
Rinoru Oils and Fats	Nagoya	5,500
Ajinomoto	Yokohama	3,500
Kato Seiyu	Okayama	2,500
Nikka Yushi	Wakamatsu	1,500
Fiji Seiyu	Kobe	1,000
Yokkaichi Yushi	Honshu	400
Total		69,560

Source: (58).

TABLE 42.—Japanese Soybean Supply Stabilization Association Budget for Fiscal Year 1977.

Operating Expenses	Million Yen	$1,000
Bank Interest	353.0	1,471
Research Work	11.0	46
Storage Cost	781.2	3,254
Storage Checking	2.2	9
Insurance	5.4	23
Administrative Expenses	57.6	240
Total	1210.4	5,043

Source: (58).

The Japanese Wheat Market

Domestic wheat production in Japan has been on a downward trend, which has been the case with most other major crops except rice. There are a number of reasons for this decrease. Probably the most important reason is that the production of wheat is less profitable than rice. Using Japanese government cost estimates, the net revenues per acre from rice and wheat for 1976 were $1777 and $504, respectively. As a result, imports of wheat have been increasing to keep pace with the growing demand.

USES OF WHEAT

The demand for wheat arises primarily from a demand for wheat processed for human food consumption. The use of wheat as an animal feed is largely as a milling by-product (Table 43).

Since there are a number of varieties of wheat, it is important to explain that all the domestically produced wheat in Japan is analogous to red winter wheat. The domestic wheat is of generally poorer quality than imported varieties as a result of a lower density, higher ash content, and thicker husks. The thicker husks are more difficult to remove, resulting in a lower milling yield. This wheat is used exclusively for making Japanese noodles. The 1985 government production projections were developed with the goal of domestic wheat supplying 60% of the wheat required by the Japanese noodle industry.

Food Use

The consumption levels of wheat are currently the center of much discussion and debate in Japan in connection with the decreasing rice consumption. The daily per capita caloric consumption in Japan categorized by foodstuffs is shown in Table 44. As discussed in a previous section, rice has been and still is the most important crop and foodstuff in Japan. It is also one of the few foods for which Japan is 100% self-sufficient. It is, therefore, the government's and in particular the Food Agency's wish that rice production be encouraged (as it is) and that all the rice produced be consumed. However, since 1960 rice consumption has declined by 303.6 calories per person per day or 27%.

This decrease in rice consumption has occurred during a period of dramatic dietary diversification and growth of food consumption in Japan. Consumption of meat, oils and fats, dairy products, fruit, and sugar has increased 959, 427, 475, 330, and 207%, respectively, since 1955. During this time consumption of all grains decreased by 19%, but consumption of wheat increased by 72.3 calories or 30%. However, the government gives the impression through official communications that it feels the increase in wheat consumption is largely responsible for the decrease in the amount of rice consumed (even though this argument leaves 303.6 — 72.3 = 241.3 calories unexplained). The government is presently using this argument to justify its present limitation of increased wheat imports to the rate of population growth.

At present, future total wheat consumption is expected to increase at the same pace as population growth (approximately 1%) and per capita wheat consumption is expected to level off. Since the government controls the wheat market, it is possible for the government to limit any growth in per capita consumption. The government, however, claims that it recognizes that a person's preference for one food over another is a fundamental right; thus, it does not intend to force a particular diet upon the Japanese people. Instead, the Food Agency (which controls all wheat imports) is carefully watching the people's preferences so imports can be adjusted to meet only basic demands.

TABLE 43.—Wheat Consumption by Use, Japan, 1960-1976.

Year	Beginning Stocks	Total Supply	Sale			Percent Food of Total
			Food	Feed	Total	
	1000 Metric Tons					
1960	840	4,212	2,760	488	3,248	85
1965	794	5,033	3,242	900	4,142	78
1970	796	5,629	3,739	1,267	5,006	75
1972	581	5,984	3,973	1,279	5,252	76
1974	613	6,216	4,166	1,213	5,379	77
1975	837	6,669	4,500	1,185	5,685	79
1976	984	6,540	4,251	1,180	5,431	78
1977			4,375	1,300	5,675	77

Source: (22).

TABLE 44.—Daily per Capita Calorie Consumption, Japan, 1955-1977.

Year	Total Consumption	Rice	Wheat	Total Grains	Potatoes and Tuber Crops	Starch Foods	Beans	Vegetables
				Calories/Person/Day				
1955	2153 0	986.6	236.8	1406.7	137.2	32.7	94.5	52.5
1960	2289.7	1105.5	250.6	1438.5	81.5	59.9	104.4	84.1
1965	2411.0	1075.7	281.9	1397.5	53.6	76.4	97.5	89.4
1970	2478.1	914.3	298.5	1287.7	38.8	74.8	104.4	93.4
1971	2480.5	892.7	300.0	1219.9	40.0	71.9	105.4	95.5
1972	2514.6	879.9	299.7	1202.9	40.6	73 3	103.7	94.1
1973	2521.5	872.8	300.1	1197.0	39.1	71.9	103.0	87.9
1974	2488.6	862.8	302.1	1186.8	37.8	69.1	99.7	89.4
1975	2466.1	844.4	305.3	1174.6	38.7	69.5	99.1	86.7
1976	2482.6	829.3	308.4	1163.7	39 8	81.3	94.2	87.5
1977	2489.6	801.9	309.1	1136.7	41.8	85.2	92.7	90.6

Year	Fruit	Meat	Eggs	Milk and Dairy Products	Fish	Sugar	Oils and Fats	Other Food
				Calories/Person/Day				
1955	17.2	12.7	14.0	19.4	63.6	132.9	67.5	102.1
1960	28.9	27.5	26.9	35.9	86.6	157.2	105.0	53.2
1965	38.8	53.7	49.4	60.7	89 9	196.3	161.0	46.9
1970	53.4	83.1	63.5	81.0	91.3	282.7	228.9	45.1
1971	52.4	92.8	63.3	81.8	95.3	280.2	237.8	44.2
1972	61.8	100.9	62.1	83.6	95.3	294.0	258.1	44.2
1973	60.3	108.1	61.5	85.1	98.3	294.9	269.7	44.7
1974	56.4	109.0	59.9	83.7	100.3	276.7	277.2	42.6
1975	58.1	111.6	59.8	85.9	103 1	262.6	276.6	39.8
1976	55.0	117.4	60.9	88.1	105 2	265.2	283.0	41.3
1977	56.9	126.9	61.7	92.2	100.8	275.4	288.8	39.9

Source: (25).

TABLE 45.—Total Wheat Flour Production by Use, Japan, 1955-1977.

Fiscal Year	Bread	Noodles	Cakes	Industrial Products	Household*	Other	Total Production
				1000 Metric Tons			
1955	667.6	874.2	277.2			261.7	2,080 7
1960	771.5	1,022.5	316.3	83.4		177.1	2,370 9
1965	996.9	1,166.8	402.7	98 0		313.0	2,977.5
1966	1,034.7	1,291.7	451.4	108.3		344.8	3,234.0
1967	1,097.1	1,269.8	463.1	90.0		373.3	3,294.2
1968	1,080.5	1,335.5	480.4	91.9		368.7	3,357.1
1969	1,142.1	1,298.7	482.3	115.5	130.7	220.7	3,389.9
1970	1,154.1	1,304.0	464.2	104.3	137.2	238.0	3,401.7
1971	1,167.4	1,332.9	467.0	84.0	134.0	277.4	3,462.8
1972	1,246.0	1,377.0	457.4	113.5	117.0	272.1	3,583.0
1973	1,306.4	1,446.8	488.5	119.1	150.6	241.3	3,752.6
1974	1,306.5	1,415.8	485.4	126.8	141.2	230.9	3,706.7
1975	1,410.5	1,448.5	559.1	119 7	175.9	282.1	3,995.9
1976	1,406.4	1,446.6	531.0	122.5	170.6	277.0	3,954.1
1977	1,420.0	1,330.0	560.0			650.0	3,960.0

*Included with other for 1955-1968.
Sources: (22, 82).

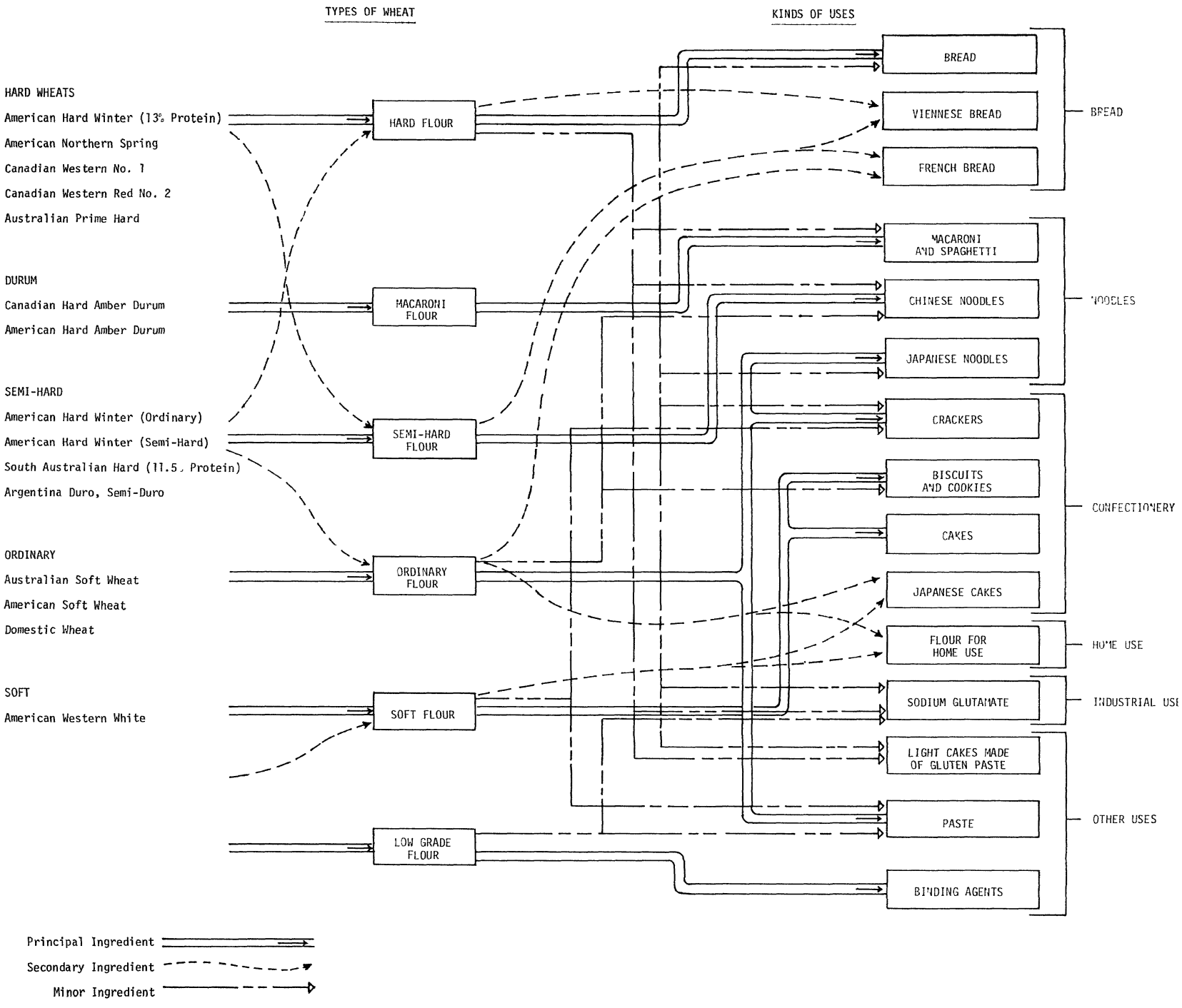

FIG. 6.—Types of wheat and their end use in Japan.

The flour milling industry counters this by requesting more wheat than the government is willing to supply. In the opinion of many of the traders and association staff, the government is keeping the supply of wheat very tight. Opinions are mixed as to how much additional wheat the Japanese people would consume if the government relaxed import constraints or reduced the resale price to world levels.

As was discussed earlier, wheat is imported primarily for human consumption. The wheat imported as food wheat is milled at a flour extraction rate of 78% vs. the feed-wheat flour extraction rate of 45%. Flour from feed wheat is also used for human consumption, with the only difference the extraction rate. The uses of the flour produced from the wheat are given in Table 45.

The growth in production of all types of processed wheat flour products has been almost 100% since 1955. It should be recognized that within each of the broad classes of products, there are many different products. Furthermore, different varieties of wheat are used in the production of the different products. This is illustrated in Figure 6.

There is a significant difference between rural and urban consumption patterns. Urban people consume about the same amounts of bread and noodles; however, bread consumption is increasing. Rural people consume more noodles; therefore, as more people migrate to urban areas and as the popularity of bread increases, it is likely that there will be changes in the relative proportion of wheats used in various products.

Feed Wheat

Approximately 22% of the wheat consumed in Japan is considered feed wheat. The feed wheat market is a somewhat complicated market. Of the 1.3 million MT of feed wheat in 1977, approximately 130,000 MT were used directly in mixed animal feeds. The other 1 million MT plus were milled at an extraction rate of 45% flour, which leaves 55% wheat bran that is used in animal feeds.

The wheat used for animal feed directly has been primarily Australian standard white and "off grade" varieties (Table 46), although some of this wheat came from Canada, France, and Argentina.

Two types of mills are designated by the government to mill feed wheat at the special extraction rate. The first system was started in February 1958 and is called the "Senkan" system and the mills are called Senkan mills. The Senkan mills are small operations, and can mill only feed wheat at general flour mills

TABLE 46.—Types of Imported Wheat Sold for Mixed Feed in Japan, 1955-1977.

Calendar Year	Total	Manitoba No. 5	Manitoba No. 6	Hard Wheat (Ordinary)	Australian Standard White	Australia Off-grade	French	Dark Northern Spring	Argentina	High Protein
	1,000 Metric Tons									
1955	58	7	16	7	28					
1956	17		8	3	6					
1957	50	5	43		2					
1958	58	11	46							
1959	67	2	6		41	18				
1960	74	1			17	66				
1961	59				3	56				
1962	38					38				
1963	27					27				
1964	23	1			6	5	11			
1965	6						6			
1966	10			1		1	8			
1967	13			4	3	6				
1968	9				1	8				
1969	24				2	7	15			
1970	136				10	124	2			
1971	113				5	108				
1972	127					127				
1973	119			29		52		1	37	
1974	31			2		24				5
1975	5					5				
1976*	58									
1977*	132									

*The breakdown by wheat type was not available for 1976 and 1977.
Sources: (22, 34).

TABLE 47.—Types of Imported Wheat Used in the Japanese Wheat Bran Program, 1964-1977.

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
							1,000 Metric Tons							
Canada	217	224	233	240	155	59		50	2					
Manitoba No. 4	195	224	233	240	155	59		50	2					
Manitoba No. 5	22													
United States	255	343	391	404	399	383	590	543	484	984	588	480	434	433
Hard Winter (high protein)	49	86	155	159	171	171	220	234	254		230	284	216	208
Hard Winter (ordinary)	206	244	235	245	228	183	165	143	169	631	229	189	217	208
Dark Northern Spring							203	166	66	220	129	7		
Western White		13	1			29	2			59				
Soft Red Winter										74				17
Australia	421	326	377	457	576	718	541	538	660	122	561	780	811	853
Australian Standard White	421	326	363	421	430	453	483	422	411	77	340	413	410	422
Queensland			14	36	146	265	58	26	178	33	155	233	280	266
New South Wales								90	71	12	16	54	121	166
Argentina										75	33			
Total	893	893	1,001	1,101	1,130	1,160	1,131	1,131	1,151	1,181	1,182	1,180	1,245	1,287

Source: (22).

(mills which also mill food wheat) which is called the "Zosan" system. This system was started in 1959. In order to assure adequate production of bran and to make the financial expense worthwhile, operation of this system is kept under tight government control, including administrative guidance in marketing (5). The different types of wheat used in these programs are given in Table 47.

The bran produced via the Senkan and Zosan systems was originally used almost entirely for dairy feeds, but it is now used in the production of other animal feeds as well. At present 43% is used in dairy feeds, 22% in beef, 15% in poultry and 20% in hog feeds.

The flour produced by this program is food grade and of uniform quality. Some of the flour is sold in this pure form directly to processors, but most of it is used for mixing with other flours to obtain the desired product characteristics.

THE WHEAT PROCESSING INDUSTRY

After World War II, rapid restoration of the domestic flour milling industry resulted in 3,000 small mills being brought into operation. Most of these mills had outmoded and inefficient equipment and produced a lower quality flour (5). As Japan recovered more fully, new efficient plants were constructed which produced a better quality flour at low cost. This led to a growing inability on the part of the smaller mills to remain competitive. In 1947, there were 4,490 flour mills; this number had decreased to 236 in 1978.

There are a number of additional reasons for the changes in the structure of the flour milling industry. Prior to 1946, almost all wheat milled by Japanese flour mills was produced domestically. After 1946, an increasing amount of the wheat was imported until today domestic wheat only accounts for 4% of consumption. Prior to 1946, most of the flour mills were located in the interior of Japan where the wheat supply was located. However, since that time most of the new mills have been located in port areas in order to take advantage of transportation economies, etc. associated with the imported wheat. This accelerated the closing of many of the smaller mills. The present structure of the flour milling industry as well as the structure in 1968 are illustrated in Table 48.

Those mills with a daily capacity greater than 200 MT represent 20% of all mills, but they produce more than 70% of the flour and operate at an operational ratio of 63.7%, higher than any other capacity group. Also, those mills with less than 50 MT capacity/day are characterized by sporadic operations as is evident from the operational ratio. In this case, milling capacity is defined as normal output when

TABLE 48.—The Number of Flour Mills,* Capacity, and Production by Mill Capacity, Japan, 1968-1978.

Milling Capacity per Day (MT)	Year	No. of Mills	No. of Mills, Percent of Total	Milling Capacity,† 1000 MT	Milling Capacity, Percent of Total	Actual Production,† 1000 MT	Actual Production, Percent of Total	Operational Ratio,‡ Percent
Less than 20	1978	83	35.2	117	1.2	13	0.2	11.1
	1968	204	50.9	330	3.7	28	0.7	8.5
20- 50	1978	11	4.7	102	1.1	15	0.3	15.7
	1968	48	12.0	416	4.6	53	1.3	12.7
50-100	1978	38	16.1	839	8.8	342	6.2	40.8
	1968	71	17.7	1,492	16.6	363	8.7	24.3
100-150	1978	37	15.7	1,305	13.8	635	11.5	48.7
	1968	26	6.5	920	10.3	363	8.7	39.5
150-200	1978	20	8.5	1,020	10.8	615	11.2	60.3
	1968	14	3.5	693	7.7	314	7.6	45.3
Greater than 200	1978	47	19.9	6,104	64.3	3,887	70.6	63.7
	1968	38	9.5	5,112	57.0	3,030	73.0	59.3
Total	1978	236	100.0	9,487	100.0	5,507	100.0	58.1
	1968	401	100.0	8,963	100.0	4,151	100.0	46.3

*This table excludes Senhan mills, which process only feed wheat.
†Milling Capacity and Actual Production are defined as rated capacity and actual output for a 24-hour day and 25 days per month.
‡The operational ratio is calculated by dividing the production of flour by the milling capacity.
Sources: (26, 46).

operating 24 hours per day, 25 days per month. Therefore, those mills with less than 50 MT capacity are operating less than 3 days per month or 2.5 hours per day.

As is the case with the formula feed industry and the soybean processing industry, the flour milling industry is highly concentrated. The four largest companies own 15% of the flour mills and produce 62.7% of this flour in Japan (Table 49). There are a number of reasons for this concentration. The companies which are large today were more aggressive and progressive than companies which did not grow as large in the past. These companies were able to create and secure stable markets for their products and to reduce costs through marketing and plant expansions at coastal facilities. These companies also developed better management personnel and acquired access to capital markets which helped to provide the funds necessary for expansion. The four largest flour millers are listed in Table 50, along with some pertinent statistics concerning each company. It is not surprising that three of the four belong to a Sogo Shosha.

TABLE 49.—Production of Flour and Production Capacity by Company Size, 1973-1977.

Year	Companies by Size	Daily Production Capacity, MT	Percent of Total Daily Production Capacity	Actual Production, 1000 MT	Percent of Actual Production	Number of Companies	Percent of Total Number of Companies
1973	Largest Four*	15,893	51.9	2,358	62.8	4	1.9
	Others	14,755	48.1	1,395	37.2	205	98.1
	Total	30,648	100.0	3,753	100.0	209	100.0
1974	Largest Four*	16,246	52.6	2,349	63.4	4	2.0
	Others	14,632	47.4	1,358	36.6	199	98.0
	Total	30,878	100.0	3,707	100.0	203	100.0
1975	Largest Four*	16,300	52.4	2,556	64.0	4	2.0
	Others	14,792	47.6	1,440	36.0	199	98.0
	Total	31,092	100.0	3,996	100.0	203	100.0
1976	Largest Four*	16,769	53.0	2,478	62.7	4	2.1
	Others	14,878	47.0	1,476	37.3	189	97.9
	Total	31,647	100.0	3,954	100.0	193	100.0
1977	Largest Four*	16,508	52.4	2,489	62.7	4	2.1
	Others	14,999	47.6	1,481	37.3	187	97.9
	Total	31,507	100.0	3,970	100.0	191	100.0

*The largest four flour milling companies are: Nisshin Seifun, Nippon Seifun, Showa Sangio, and Nitto Seifun.
Source: (37).

TABLE 50.—Information on the Four Largest Wheat Processing Companies as of March 31, 1978.

	Nisshin Seifun	Nippon Seifun	Showa Sangio	Nitto Seifun
Relative ranking	1	2	3	4
Production of wheat flour (MT)	1,217,401	819,251	386,843	163,693
Number of flour mills	16	12	4	3
Silo storage capacity (MT)	221,536	128,156	219,387	35,236
Member Sogo Shosha	Fuyo	Mitsui	*	Mitsubishi
Year established	1907	1896	1936	1898
Total assets (million yen)	93,435	50,399	80,586	*
Number of employees	2,983	1,526	1,735	315
Total annual sales (million yen)	221,000	105,000	135,000	20,623
Wheat flour as percent of total sales	61	91	24	84

*Indicates that the information was not available from the sources listed below.
Sources: (27, 37, 62).

The past 5 years have seen relatively little change in the concentration of the flour milling industry. This is probably due to the government wheat allocation system which the industry claims is constraining consumption and which is operated in a manner that maintains the status quo. This allocation system is explained in greater detail later in this section.

WHEAT IMPORTS AND U. S. MARKET POSITION

Imports of wheat and wheat equivalent products have increased more than 150% since 1955 (Table 51). This has been the result of U. S. PL-480 shipments in the 1950's, dietary diversification which was possible because of higher incomes, declining domestic production, and increasing populations.

The importation of wheat is controlled entirely by the Japanese Food Agency.[17] Registered Japanese trading firms merely handle the administrative details of securing the wheat; *i.e.*, they obtain price quotes from suppliers, arrange for actual shipment, etc.[18] The flow of wheat in Japan is illustrated in Figure 7. As is the case with other commodities, the larger trading firms dominate the importation of wheat; however, since the importation is controlled by the Food Agency, this is really an irrelevant point.

Japan primarily purchases wheat from three countries, the U. S., Canada, and Australia (Tables

[17]The importation of wheat and associated government control is discussed in greater detail in the next section.

[18]The only exception to the wheat import control by the Food Agency is that if wheat is being imported in order to be processed for export, it is then not under the control of the government.

TABLE 51.—Total Japanese Imports of Wheat and Wheat Flour in Wheat Equivalent, by Quantity and Value, 1955-1977.

	Wheat		Wheat and Wheat Flour in Wheat Equivalent	
Year	Quantity (1000 MT)	Value ($1000)	Quantity (1000 MT)	Value ($1000)
1955	2,288	*	2,333	*
1960	2,678	176,870	2,783	183,730
1962	2,562	180,940	2,665	187,690
1964	3,592	262,020	3,646	265,330
1966	3,917	278,770	3,917	278,830
1968	4,073	289,410	4,073	289,430
1970	4,885	318,390	4,685	318,440
1971	4,872	347,113	4,872	347,151
1972	5,149	361,513	5,150	361,554
1973	5,386	658,961	5,386	659,008
1974	5,377	1,206,920	5,377	1,206,954
1975	5,654	1,117,094	5,654	1,117,131
1976	5,827	1,053,921	5,827	1,053,958
1977	5,676	748,340	5,676	749,377

*Values for 1955 were not reported.
Source: (67).

46, 47, and 52). These countries produce the majority of the world's exportable wheat. As far as competition between the countries is concerned, Canada and Australia export different types of wheat which do not compete in the same end-use markets. Australia primarily exports soft wheats and Canada exports hard wheats. However, the U. S. exports both hard and soft wheats and thus U. S. wheat is in competition with both Canadian wheat and Australian wheat.

Over the last 20 years, the U. S. share of the Japanese wheat market has steadily increased (Figure 8). Wheat Associates personnel believe that in the future the U. S. will maintain its market share at 55-60%. The annual variations in the U. S. market share are largely due to fluctuations in wheat production in Australia and Canada. Once again, the U. S. has been delegated the role of residual supplier.

At present Japan has import agreements with both Canada and Australia. These agreements call for Japan to import approximately 1.4 million MT from Canada and 1.0 million MT from Australia. The agreements basically set out annual target amounts of wheat to be purchased, do not involve top Food Agency officials, and are to secure a stable supply of wheat. Since the Abe-Butz Agreement of 1975 ran out in 1978, the U. S. has not had an agreement with Japan on wheat.

As a result of the turmoil in the wheat markets in 1972, Japan entered into the agreements mentioned in the previous paragraph. However, recently there has been more emphasis on a world or multilateral trade agreement between wheat exporting countries and wheat importing countries. This sort of agree-

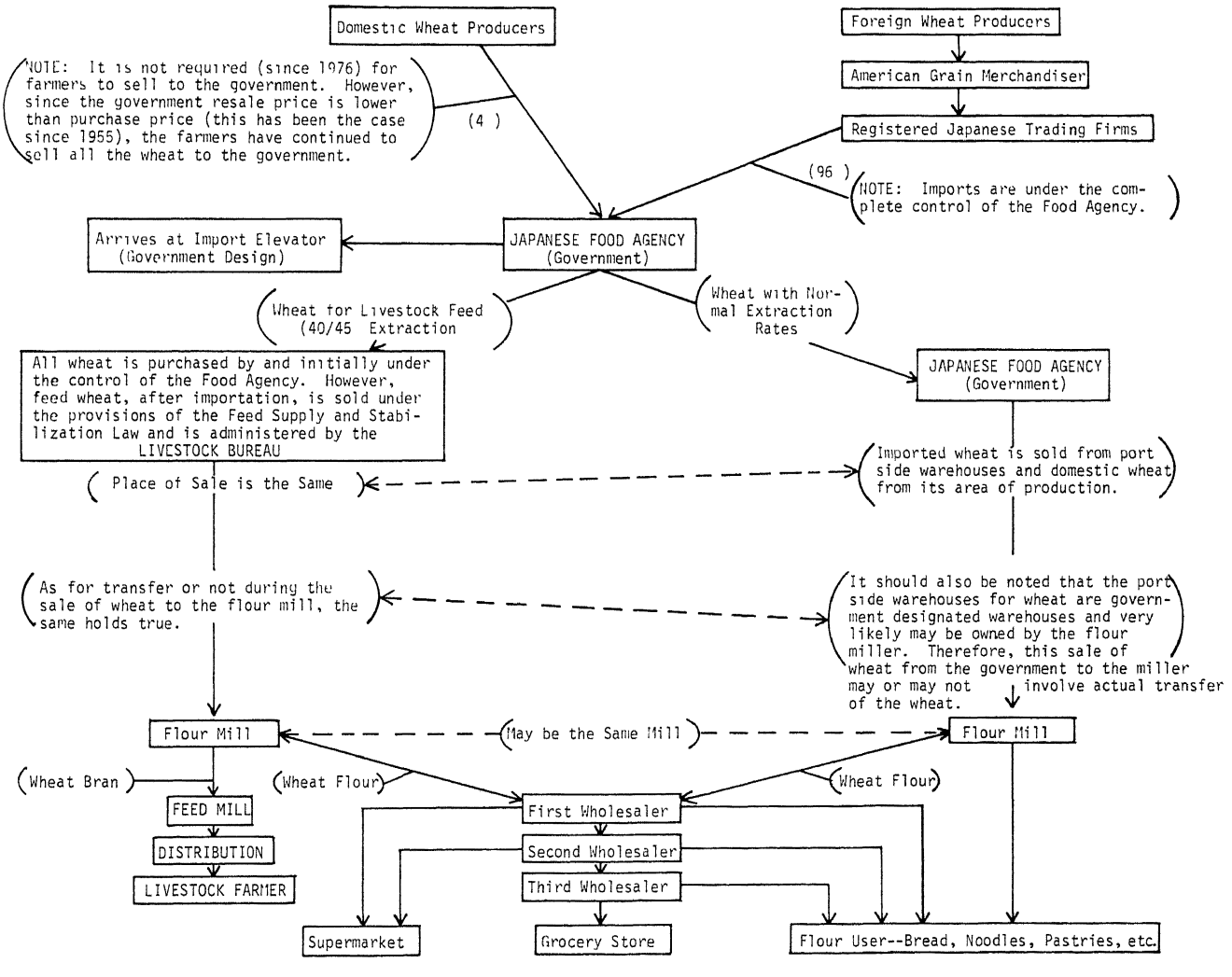

FIG. 7.—The flow of wheat in Japan.

ment has been negotiated under the auspices of the U.N.C.T.A.D. These negotiations have dealt with stock level schemes in both producing and consuming countries as well as price levels. If a multilateral agreement should be reached, bilateral agreements would not be necessary.

GOVERNMENT PRESENCE IN THE JAPANESE WHEAT MARKET

Government Purchase of Imported Wheat

The Japanese government through its Food Agency purchases and controls all imported wheat for domestic consumption. The quantity of wheat (or quota) that the government decides to purchase and import each year is determined by a process of developing an annual supply-demand program for the coming year. This program is developed by wheat types and varieties. In the course of determining the quantities of each wheat variety to be imported, various factors are taken into consideration. These factors include estimates of demand by wheat type (these estimates are determined by the historical uses of the wheat), availability of wheat by type in various supplier countries, the supply and demand conditions for rice, warehousing conditions, and bilateral agreements with exporting countries.

The Food Agency does not purchase wheat directly from exporters in foreign countries, but instead purchases are made from government designated wheat importers who in turn have purchased wheat of the desired quality, type, and description from the exporters. These designated wheat importers also take care of all the freight, marine insurance, and other details so that the price the Food Agency pays is CIF, Japan, plus unloading charges.

When imported wheat is to be purchased, the Food Agency informs registered importers of the conditions set forth for the purchase at the beginning of each term of the purchase. The conditions include items such as source of wheat, producing year, variety or class, grades, terms governing purchase of wheat

TABLE 52.—Imports of Japanese Wheat by Type of Wheat and Sources, 1973-1977.*

Food	1973	1974	1975	1976	1977
			Metric Tons		
U.S.A.					
Western White	1,226,344	1,029,184	964,310	1,063,380	1,161,318
SRW	0	0	0	0	0
Hard Winter, 13%	306,384	447,468	405,830	459,338	465,834
Hard Winter, 11.5%	512,226	451,966	404,784	391,546	456,550
Hard Winter, ordinary	45,900	0	0	0	0
(Dark) Northern Spring, 14%	411,842	778,968	635,684	600,051	642,920
Hard Amber Durum #2	30,550	29,500	31,450	52,100	50,000
U. S. Total	2,533,246	2,737,086	2,442,058	2,566,415	2,776,622
Canada					
1CW, 13.5%/12.5%	267,467	601,642	313,300	0	0
1CW/2CS, 13.5%/12.5%	0	211,942	1,029,278	0	0
1CW, 13%	0	0	0	0	0
1CW, 13.5%	1,427,462	573,926	0	334,626	246,668
1CW/2CW, 13.5%	0	0	0	981,175	1,047,772
1CW, 14%	0	0	0	0	0
2CW, 13.5%	0	300	0	0	0
Durum #2	3,600	20,500	0	0	0
Utility #1 (Pictic)	10	0	0	0	0
Utility #1 (Glenlea)	10	0	0	0	0
Canada Total	1,698,549	1,408,310	1,342,578	1,315,801	1,294,440
Australia					
FAQ/ASW, West/Victoria	0	294,951	254,084	0	0
FAQ, West	72,142	0	0	0	0
FAQ, Victoria	11,500	0	50,000	0	0
Australia Victoria Soft	0	0	0	0	0
PH, 13%/14%	0	65,742	0	0	0
FAQ, NSW	0	0	0	0	0
ASW	0	0	0	212,426	249,768
Australia Total	83,642	360,693	304,084	212,426	249,768
Food Total	4,315,437	4,506,039	4,088,720	4,094,642	4,320,830

*Purchase quantity on tender basis (Japanese fiscal year, April-March).
Source: (83).

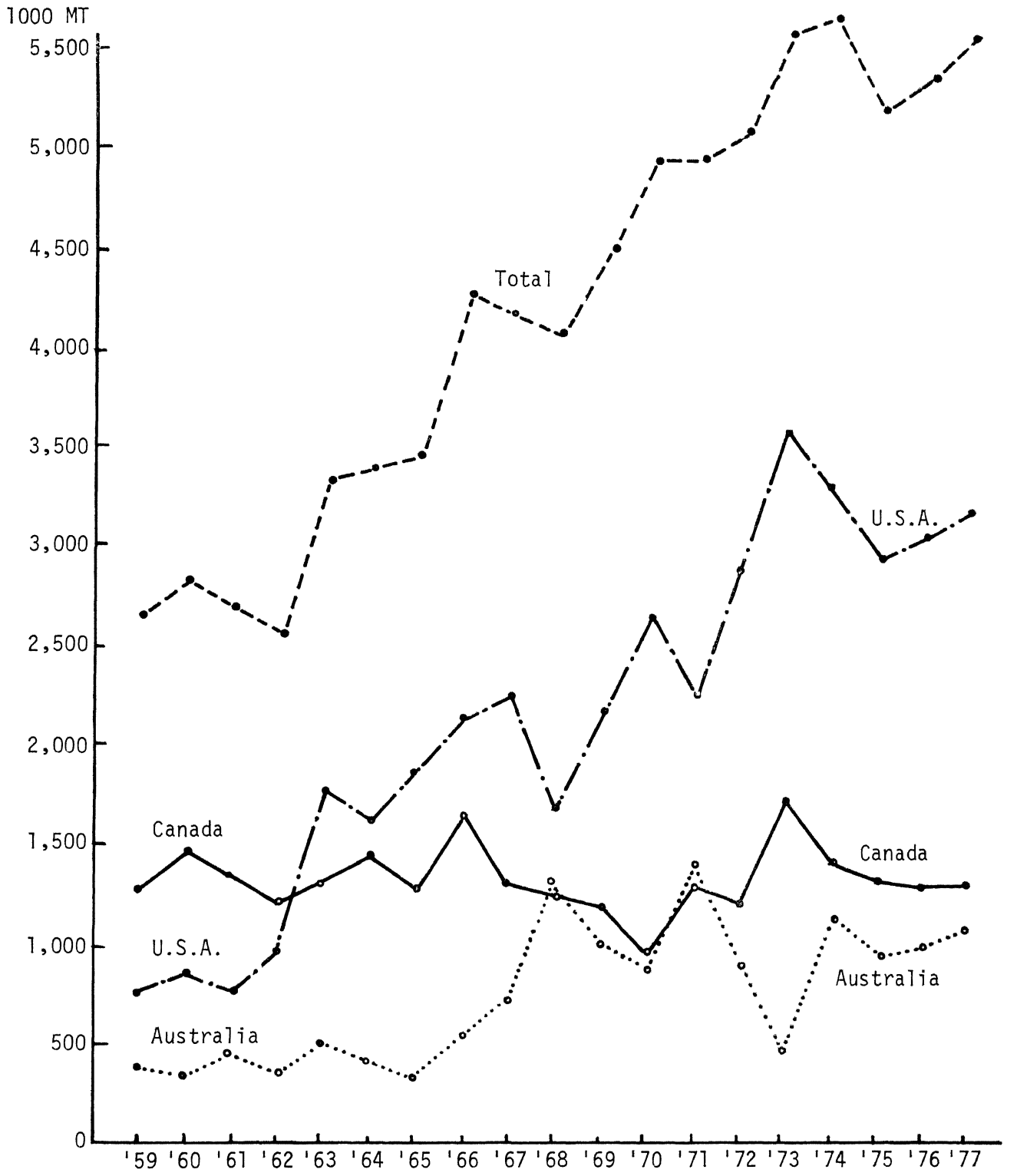

FIG. 8.—Japanese Food Agency wheat imports by country of origin, 1959-1977.

at reduced prices, penalties, insurance, and default of shipping period.

This notification is given not later than 2 days before the accepted date of the sales application which is usually every Wednesday between 2:00 and 2:30 p.m. The importers then submit to the Food Agency a sales application for imported wheat based on the Food Agency specifications. The Food Agency selects the seller whose offering price meets the target purchase price range and is among the lowest tender prices. The Food Agency is not required by law to take the lowest tender and uses some discretion in the selection. The Food Agency then enters into a sales contract with the seller or importer within 10 days following the tender. This contract explicitly stipulates all terms of sale.

In contrast to the Japanese imports of feed grains and soybeans, the average "unexplained difference" for 1 month lagged shipments of imported Japanese wheat is a positive $2.53 and is $3.31 higher than the unexplained difference for shipments of wheat to the Netherlands (Table 53). The government controlled system of importation of wheat in Japan would seem to be less efficient than the basically free market import system for feed grains and soybeans.

Setting a Target Purchase Price

The law concerning imports of wheat specifies that the Food Agency shall set an estimated target purchase price for wheat in advance of any purchases. This target price must include all expenditures by the importer in the fulfillment of their contract to deliver the wheat to specified Japanese ports. The target price covers the total F.O.B. price, freight rate, marine insurance, interest, shortages, harbor charges, and importer's commission.

The freight rate is based upon a single unloading of an 18,000 MT ship and deviations from these standards are accounted for. The importer's commission is a fixed commission estimated as the expenditure of the importer which is required for importing wheat (5).

Registration and Qualifications of Importers

The Food Agency registers wheat importers each year under regulations initially established in 1957 in order to exclude inexperienced, unreliable, and unfaithful importers from the list of authorized contractors. After being screened, importers are registered with the Food Agency as eligible importers and importers must re-register each year during the period March 1 through 15. The applicants must then meet the following qualifications (5):

- They should be grain importers by trade.
- They should be joint stock companies with paid-up capital of more than 100 million yen and the importers must possess a guarantee from a financial organization that they will be able to obtain sufficient funds necessary to import grain.
- The importer shall have a main or branch office in Tokyo manned by no less than six Japanese officers and staff members who are experienced in the grain import business and have actually engaged in such business.
- The importers must have Japanese officers or staff members with import experience sta-

TABLE 53.—Wheat: Unit Values and Freight Rates at Various Marketing Levels from U. S. Farmers to Dutch and Japanese Importers, Market Years 1969-70 to 1974-75.

Item	69-70	70-71	71-72	72-73	73-74	74-75
	Dollars per Metric Ton					
(1) Unit value received by U. S. farmers*	45.93	48.87	49.23	64.67	145.14	150.28
(2) Implicit U. S. inland freight	+11.61	+11.75	+12.34	+8.20	+6.38	+26.11
(3) Total U. S. export unit value of wheat	57.54	60.62	61.58	72.87	151.52	176.39
(4) U. S. export unit value to Japan	57.13	59.38	61.28	82.10	162.40	186.82
(5) Ocean freight to Japan	10.31	10.85	4.93	10.34	25.30	14.34
(6) Japanese import unit value†	65.16	69.92	67.61	90.58	172.48	218.54
(7) Unexplained difference	—2.28	—0.31	+1.40	—1.86	—15.22	+17.38
(8) Japanese import unit value lagged 1 month	66.09	70.36	67.48	94.92	186.97	214.53
(9) Unexplained difference	—1.35	+0.13	+1.27	+2.48	—0.73	+13.37

*Unit value is the weighted season average price.

†In Japanese yen/metric ton: 1969-70, 23,442; 1970-71, 25,154; 1971-72, 21,734; 1972-73, 25,955; 1973-74, 48,706; 1974-75, 64,577.

Note: Lines 3, 7, and 9 have been developed from the information in the tables as follows:

Line (3) = (1) + (2)
Line (7) = (6) — [(4) + (5)]
Line (9) = (8) — [(4) + (5)]

Source: (7).

tioned in the principal countries (U. S., Australia, Canada) exporting grain to Japan for a specified term of service.

- The importer or person in his employment shall have no past record of being punished for violations of the Foodstuff Control Law, the Price Control Ordinance, or laws governing import and export control.

Importer Share System

In order to prevent excessive competition among importers purchasing foreign wheat and in order to insure reasonable and smooth import operations, an importer share system was instituted. A share is allocated to each importer, and each importer's maximum sales to the Food Agency are calculated by multiplying that share times the total quantity to be imported.

The specifics of the present share system were formulated in 1960 and it is called a merit system. If an importer sells wheat to the Food Agency at a cheaper rate than expected, his share is increased. When this situation occurs, the importer's share is increased by a percentage which is calculated from a formula which uses the target price, other tender prices, and quantity involved.

Wheat Stock Levels

In order to insure a stable supply of wheat, the Food Agency attempts to maintain a "comfortable" supply of wheat in stock, while making arrangements for a stable supply in the exporting countries. The domestic stocks of wheat necessary for smooth operations are considered to be a 1.7-month supply; however, the Food Agency has decided as a matter of policy to maintain stocks at a 2.3-month supply level. The government has had difficulty accomplishing these levels because of a shortage of storage space. In fact, the actual stock levels maintained in 1973, 1974, and 1975 were only 1.1, 1.6, and 1.8 months' supply, respectively. Since 1976 the Food Agency has stored considerably more grain at inland warehouses and has promoted the construction of port-side elevators, with the result that stocks of nearly a 2.3-month requirement have been maintained.

As a stock policy, the government is considering the possibility of increasing wheat stocks to a 3.0-month supply by 1980. This decision must consider

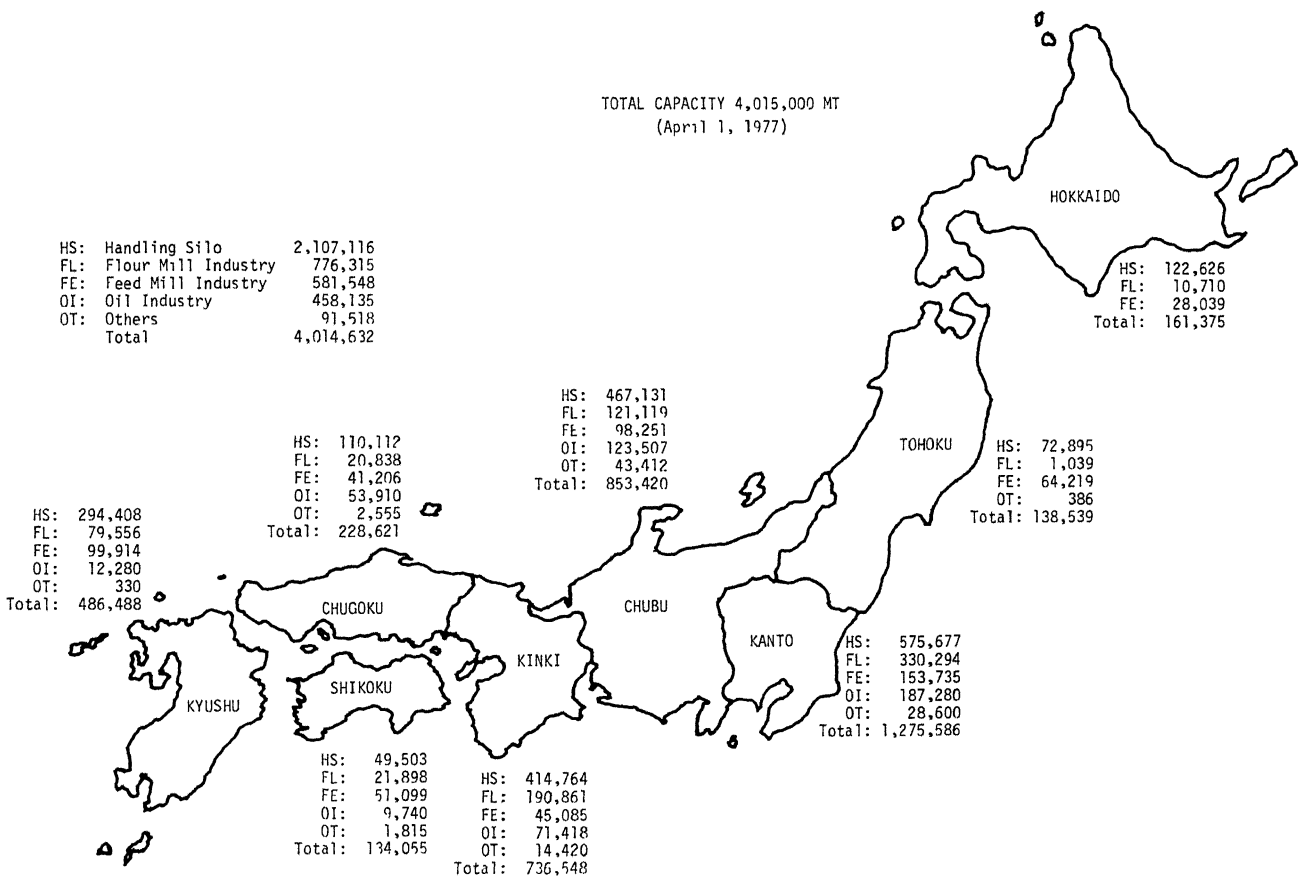

FIG. 9.—Japanese grain silo capacity by region and sector.

the international wheat situation, warehouse capacity, and new construction of port-side elevators (6). Furthermore, storage space for wheat must compete for the limited space with other commodities, most notably feed grains and soybeans. Figure 9 illustrates the location and amounts of storage by commodity. Warehouse owners prefer to store commodities which are the most profitable and which have the highest turnover. Since wheat more often does not meet these requisites, it sometimes limits the desirability of storing increasing amounts of wheat.

Since the Food Agency sells wheat by types to the miller according to their requests, the Food Agency is in the position of not just storing a 2.3-month supply of many different varieties of wheat. Therefore, from the Food Agency's point of view, the fewer types of wheat to be stored, the better (6).

Improvement Trade System

The one exception to government control and purchase of imported wheat is that which is processed for export. The wheat used for this purpose can be imported free of government control at the world price under the Improvement Trade System. The term "improvement trade" means a trade system under which raw materials are imported for domestic processing into products for export. The purpose of this system is to promote exports.

The Japanese government has made transactions that are part of the improvement trade system contingent upon several factors (5):

- The trade must not impede normal export and import trade. Also, the processing company must belong to an eligible industry.
- Export prices shall be appropriate and companies involved must refrain from dumping.
- The efficiency of exported goods as defined by the following equation should exceed 105% for wheat flour or 110% for other products.

$$\frac{\text{Export Value}}{\text{CIF of Imported Goods (Raw Material for Improvement Trade)}} \times 100 = \text{Efficiency of Exported Goods}$$

- It must be possible to control processing and to prevent diversion of imported raw materials to domestic consumption. In the case of prior quotas, the total amount of processed products should be exported within 1 year from the time the quota was allocated.

Other minor exceptions to government control and purchase of imported wheat include wheat which is: 1) consumed as food on a ship or plane, 2) 100 kg in weight, or 3) carried by passengers not to exceed 100 kg (6).

Sale of Wheat Purchased by the Food Agency

The government sells domestic and imported wheat to flour millers and soysauce makers. The sales to millers are made in fixed quantities based upon past purchases, requests, milling capacity, and flour production history through a fairly rigid allocation system. The imported wheat is sold at the port-side warehouses of entry, while domestic wheat is sold in the area in which it is produced. The sale of feed wheat is conducted by the Livestock Bureau under provisions of another law, the Feed Supply and Demand Stabilization Law.

When formulating the annual supply and demand program for the next year, the quantities of wheat to be imported are designated by country of origin or specific wheat type. However, the supply and demand program does specify wheat demand by soft, semi-hard, and hard wheats, which in effect determines the supplier.

The sale of wheat to flour millers is made quarterly in accordance with the annual program, but with some room for adjustment. At this time the quantity of wheat by country and specific type is fixed by taking into consideration the actual demand for different wheat products. The quantity sold also fluctuates due to changes in stocks from the wholesale to the retail level and political considerations. If the fixed quantities are rather limited, quantities by country and type are determined without considering the users' requests because it is often not practical to drastically change quantities by country and type in the short term (6).

At present the government allocations to the flour millers are not meeting demand, with the result that: 1) the millers have essentially no wheat in stock (the government recommends that the miller maintain a 1-month supply), 2) the larger mills are buying flour to meet their clients' needs, and 3) some small commercial noodle shops are buying flour from grocery stores to meet their needs. There was also a "black market" in the flour market during 1978.

The flour millers tend to complain about the size of the allotment, even though the industry has become quite profitable and secure under the government control. The flour millers have a good margin, a ready demand for their product, and an adequate source of raw material. The Food Agency would also agree that if the flour millers received more wheat, the price of flour would decline to a level where the smaller mills could not compete. The resulting flour price would not be stable, which is contradictory to the government's long-time objective of stable food prices.

TABLE 54.—Japanese Government Purchase and Sale Prices of Imported Wheat.

Fiscal Year	Government Purchase Price (A)	Government Resale Price (B)	Government Storage and Handling Costs (C)	Difference Between Purchase and Sale Price (D) = (B) — (A)	Difference Between Sale and Cost Price (E) = (B) — (A) — (C)
	yen per ton				
1960	26119	36627	1826	10508	8682
1961	27410	36430	2034	9020	6986
1962	28073	36339	1858	8266	6408
1963	27706	36120	1767	8414	6647
1964	28979	35135	1846	6156	4310
1965	27252	35988	1889	8736	6847
1966	28781	35688	1916	6907	4991
1967	29287	35516	1801	6229	4428
1968	27732	35456	1844	7724	5880
1969	26613	35019	1896	8406	6510
1970	27385	35425	2077	8040	5963
1971	26094	35545	2219	9451	7232
1972	25372	34511	2389	9139	6750
1973	43150	38012	3115	—5138	—8253
1974	72461	45602	4502	—26859	—31361
1975	61940	47887	5289	—14053	—19312
1976	68642	65050	5759	—3592	—9357

Source: (22).

The allocation system may be subject to abuse under certain conditions. As an example, due to a tight international market for hard wheat and an increasing demand for certain hard wheat varieties, the Food Agency is trying to discourage consumption of hard wheat products by not importing enough hard wheat to meet the millers' requests (6). The Food Agency's defense to this type of action is based on the assumption that it does not abuse the system in order to decrease consumption of wheat. Furthermore, the Food Agency claims that a person's food preference is a fundamental right and the government is not trying to force the Japanese people to change these preferences. Instead, the Food Agency claims it is carefully watching people's preferences and importing only that amount of wheat needed in Japan.

Government Resale Prices of Wheat

The price at which the government sells the wheat to flour millers has been a topic of controversy for many years from both inside and outside Japan. According to provisions of the Food Control Law and by Cabinet Ordinance, the resale price of wheat is set so as not to exceed "the ceiling price of wheat within a family's cost of living." The prices of imported wheat, domestic wheat, and milled rice as well as other economic factors are considered in establishing the resale price of wheat.

During the period from 1952 through 1972, the resale price of wheat declined slightly (Table 54). After 1972, world wheat prices almost doubled in 1973 and again in 1974. These price increases were not totally accompanied by an equivalent increase in the resale price. During this same period the consumer price index was rising rapidly due to higher energy and other raw material costs. Thus, the Japanese government did not want to aggravate this situation by also increasing the price of food products, such as wheat. Therefore, as opposed to the previous 20 years in which the government made a sizable profit from importing wheat, from 1973 through 1976, the Food Agency lost money on wheat imports.

However, the Food Agency raised the resale price of wheat in December 1973, January 1976, and July 1976. Even though world wheat prices decreased substantially since 1976, the resale price of wheat has not been reduced. As of November 1978, the Food Agency was making an average 38.7% profit (Table 55) on imported wheat or an average $125.50/MT profit. Wheat exporting countries contend that this high profit is being used to subsidize an overly generous domestic rice program and would like to see the resale price reduced. The Japanese contend that the wheat resale price should be increased so that the gap between the rice price and wheat price remains approximately the same. At present the price of wheat is less than the price of rice.

One other point of contention among U. S. exporters is the discrimination by the Food Agency among wheat types. As of November 1978, the only wheat types upon which the Food Agency made a profit greater than the average profit were American

TABLE 55.—Wheat Price Situation by Wheat Type.

	U. S.					Canada	Australia	All Wheat	FA Budget
	WW	HW11.5	HW13	DNS14	HAD	ICW13.5	ASW	Average	(FY 1978)
FOB (US $/MT) (January shipment)	3.88	3.91	4.05	4.05	4.30	4.45	3.86	4.10	3.79
FOB (US $/MT)	142.50	143.60	148.80	140.80	157.90	163.50	141.80	150.70	139.24
C & F (US $/MT)	158.50	159.60	164.80	164.80	173.90	179.50	157.80	166.70	154.24
CIF & C (US $/MT) (FA Purchase Price)	170.96	172.26	178.32	178 32	187.42	193.02	170.26	179.84	167.38
FAPP (Yen/MT) ($1.00 = Y188.65)	32,251	32,496	33,640	33,640	35,356	36,413	32,119	33,926	43,854 ($1.00 = Y262)
FA Cost Price or Gross Price (Yen/MT) (Includes Y5,315 administrative cost)	38,066	38,311	39,455	39,455	41,171	42,228	37,934	39,741	49,669
FA Resale Price (Yen/MT)	60,260	62,240	64,260	68,000	75,920	68,840	59,980	64,820	65,518
Net Price Difference (Yen/MT)	28,000	29,744	30,620	34,360	40,564	32,427	27,861	30,894	21,664
(Profit percentage)	(46.5%)	(47.8%)	(47.7%)	(50.5%)	(53.4%)	(47.1%)	(46.5%)	(47.7%)	(33.1%)
Gross Price Difference (Yen/MT)	22,194	23,928	24,805	28,545	34,749	26,612	22,046	25,079	15,849
(Profit percentage)	(36.8%)	(38.4%)	(38.6%)	(42.0%)	(45.8%)	(38 7%)	(36.8%)	(38.7%)	(24.2%)

Note: FOB, C & F, FAPP, and resale price comparisons of imported wheats for food usage, as of Nov. 10, 1978.
Source: (80).

wheats. One primary reason for this type of discriminatory pricing practice is the Food Agency's expressed effort to reduce hard wheat consumption (6). This is because the international price of hard varieties has increased faster than those of the semi-hard and soft varieties. Additionally, some political factions in Japan are afraid that the consumer may switch from a Japanese baked bread made of a soft domestic wheat to a more expensive hard wheat bread.

As previously mentioned, the Food Control Law provides that the government sale price of wheat: 1) shall be determined so as not to exceed a ceiling price, 2) shall be set at a price level that will stabilize consumer food expenditures as well as take into account the price of rice and other economic factors, and 3) shall be publicly announced when revised.

The ceiling price is calculated in the following manner.[19]

$$P_c = (P_w \cdot \frac{I_1}{I_0}) - C + R$$

where:

P_c = ceiling price

P_w = retail price of wheat flour during some previous period

$\frac{I_1}{I_0}$ = the ratio of disposable income of the period for which the ceiling price is being determined to some previous period

C = processing and distribution costs/unit

R = proceeds from sale of by-products/unit

In addition to the above formula, a cabinet ordinance guarantees that the increasing rate in the retail price of wheat flour will always be less than the increase in disposable income. In the ratio I_1/I_0, period 1 is established by the Minister of Agriculture, Forestry and Fisheries as a 1-month period at least 1 month before the resale price is to be revised. The base period is to be a 12-month period 5 years before period 1. The minister may elect to shorten this time to less than 5 years.

[19]The ceiling price of rice is calculated in a similar manner.

Summary and Conclusions

Agricultural exports have come to represent an activity essential to the economic well-being of the United States and in particular the U. S. farmers. As the importance of this trade continues to increase, the U. S. needs to become more aware and knowledgeable of the markets which its products are serving. The single largest foreign customer of U. S. agriculture is Japan, which has purchased 16% of all U. S. agricultural exports since 1975. Feed grains and soybeans represent more than 50% of Japanese imports of U. S. agricultural commodities. The importance of the U. S. agricultural sales to Japan is even greater in light of the continuing and increasing U. S. trade deficit with Japan.

The purpose of this report was to build one small bridge across the informational, cultural, and perceptual gap that exists between the U. S. and Japan on agricultural issues concerning the feed grain, wheat, and soybean markets in Japan. In order to do this, a descriptive analysis of the Japanese feed grain, wheat, and soybean markets was completed. This involved: 1) the description of aspects of Japanese society and agriculture affecting those markets (including the income-energy gap, the role of rice, and domestic production of feed grains, wheat, soybeans, and livestock products); 2) a description of the many governmental policies and programs affecting the feed grain, wheat, and soybean markets; and 3) a description of the primary industries that directly consume the feed grains, wheat, and soybeans.

The Japanese food and agricultural economy is very different from that of the U. S. and these differences significantly affect the feed grain, wheat, and soybean markets. Listed below are the primary conclusions drawn from the general description of those aspects of Japan's food and agricultural system affecting the feed grain, wheat, and soybean markets.

- TheJapanese food and agricultural system is a very complex system that has resulted from the combination of two different cultures, severely restricted land resources, and a democratic but extremely inefficient agricultural structure. The extremely small scale of production and agricultural structure in Japan is the root of many of the problems facing Japanese agriculture. The likelihood of a continuing trend toward large scale livestock production is high and will result in increased efficiencies. However, the likelihood of a significantly increased scale of production of paddy and upland crops is low.
- Despite the government's stated intention to diversify Japanese agriculture, its actions have encouraged rice production at the expense of diversification. The price of rice is supported at a level such that rice production is 2½ times more profitable than soybean production. The Japanese farmers have made a rational economic decision in deciding to produce rice.
- Domestic production of feed grains, wheat, and soybeans will not significantly affect the import quantities of those products and will probably continue to represent declining proportions of consumption which at present are 1.4, 0.4, and 2.6%, respectively.
- In the future a larger percentage of the meat consumed in Japan will be produced in Japan, thus eliminating the possibility that feed grain and soybean imports might be cut as a result of increased imports of livestock products. The Japanese are committed to importing raw materials for further processing to as great an extent as possible and to limit imports of livestock products with a variety of trade barriers.
- The Japanese government is committed to a trade policy of diversification of agricultural supply sources which will continue. The effect of this policy is minimal due to the fact that the U. S. has exportable supplies of feed grains, wheat, and soybeans that are not available in other surplus-producing countries in the needed quantities. As long as this situation continues, the diversification policy will have little effect. Likewise, it can be concluded that the trade agreements signed by the Japanese with other countries have had little effect on the trade of those commodities.

The description of the feed grain market involved both the private and public sectors. From that description the following conclusions were drawn.

- Feed grain use in animal feedstuffs represents almost 90% of the consumption of feed grains, up from 60% in 1960, but this trend is expected to level off.
- The average formula feed plant utilization in 1977 was 8.67 hours, 25 days/month, which represents a gross under-utilization of

investment which translates into higher formula feed prices to farmers.

- The formula feed industry is becoming a more and more concentrated industry with the 11 largest companies controlling 80% of the business. The price of formula feeds is set solely by the largest producer, Zennoh.
- Feed grains are not imported directly from international grain companies by the formula feed companies. Instead, the formula feed companies purchase their feed grain needs through Japanese trading companies which in turn import the grain. This is primarily the result of inter-company relationships between the trading companies and the formula feed companies. However, the large number of Japanese trading companies involved in importing feed grains had made the Japanese market a very competitive one. This relationship between the trading companies and the formula feed companies does not have any negative impacts on U. S. feed grain exports.
- The U. S. position in the Japanese feed grain market will probably be maintained at more than 60%. This is dependent upon production in other exporting countries, since the U. S. plays the role of residual supplier. However, on the basis of all non-price criteria for choosing suppliers, the U. S. is Japan's best supplier of feed grains. The criteria include dependability, product quality, transportation facilities, ability to hedge, historical trading relationships, etc.
- Private as well as governmental efforts to develop production-for-export projects designed to increase world supplies of feed grains, stabilize prices, and diversify suppliers have largely been failures. These projects certainly do not represent a threat to the U. S. market share in the next 10 years and probably for a longer time than that.
- Sales of surplus rice in Japan to the formula feed industry have significantly affected the use of feed grains. However, it is unlikely that there will continue to be sizable quantities of surplus rice after this second very costly rice disposal operation is completed in 1982.
- The ability of either government or industry funds to significantly offset feed grain price increases similar to those in 1973 is minimal. The funds which have been set up by the formula feed industry and the government are costly measures, the principal effect of which is probably psychological.
- The Mixed Feed Supply Stabilization Organization (MFSSO) has stockpiled 195,000 MT of corn and 110,000 MT of sorghum. The Food Agency, in conjunction with the MFSSO, has stockpiled 300,000 MT of barley. However, due to funding cuts, the MFSSO has not been able to attain its original objective to stockpile a 1-month supply of feed grains.

The soybean market description resulted in a number of important conclusions being identified.

- Soybean use is very diversified, but the historical trend has been for a large proportion of the soybeans to go into non-food soybean uses. This trend is expected to ease in the future.
- Historically the Japanese have imported soybeans to meet the soybean oil demand and imported small quantities of soybean meal to meet the excess demand for that product. One reason for the increasing imports of soybean meal in recent years is the increasing availability and use of more competitive substitutes for soybean oil, with the relatively reduced demand for soybean oil. If this trend continues, Japan will import greater quantities of soybean meal.
- The soybean processing (crushing) industry is highly concentrated, with the top 12 companies crushing 70% of the soybeans. Furthermore, the soybean industry, after tough financial times (losses of $250 million) in 1975 due to institutional speculation, is on much firmer ground and is almost 100% hedged in its operations.
- The soybean processing companies import their soybean requirements through the Japanese trading companies. This is due to inter-company relationships but does not have any adverse effect on the market.
- The U. S. soybean market share in Japan was 97% in 1978, the highest ever. The U. S. is virtually certain to maintain its market share above 90%. Chinese imports will represent a declining percentage of the market and Brazilian beans will not enter the market in significant quantities barring government intervention.
- Private Japanese companies have become involved in at least 17 fats and oils joint venture projects. The majority of these are in the palm and copra oil refining industries in

Malaysia and the Philippines, respectively. These projects mean increased competition for soybean oil in the Japanese market, as the Japanese companies involved have made commitments to purchase large quantities of the oils produced by the joint venture projects.

- Soybean supply stabilization efforts via a soybean stockpiling program by the government are insignificant because of the small quantities involved.

The wheat market description resulted in the following conclusions.

- Government efforts to increase domestic wheat production have not shown a positive response since the farmer alternative of producing rice is much more profitable.
- The consumption of wheat has significantly increased in Japan over the past 25 years. However, the per capita consumption is expected to level off in view of continued rice surpluses and government pressure to limit imports.
- The flour milling capacity in Japan is basically controlled by 4 companies which have 35 flour mills and produce 62.7% of the nation's flour. The trend toward fewer interior flour mills is expected to continue.
- Wheat imports from the U. S. are expected to continue to increase, with the U. S. share of the market being maintained at the 55% to 60% level.
- The importation, domestic marketing, pricing, storage, and allocations of wheat to millers are all controlled by the Japanese Food Agency. This agency is attempting to limit wheat consumption while encouraging rice consumption.
- Profitmaking by the Food Agency on its wheat exports is expected to continue.

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Appendix

As was briefly mentioned in the introduction, there is relatively little written in English on the Japanese food and agricultural system, and in particular the feed grain and soybean markets. In the pursuit of information on these topics, trips were made to New York, Washington, D. C., University of Michigan, and Japan. In each of these places, the respective libraries were explored for information on Japanese agriculture. Although some material was found in the libraries, the real sources of the details, facts, reports, testimony, and most important—understanding—came from discussions and interviews with people from all sectors of the economy on both sides of the Pacific. People concerned with and knowledgeable about various aspects of Japan's government, agriculture, marketing, and industrial structure gave of their time, energy, and knowledge in an effort to help the authors gain a greater understanding of the complicated Japanese food economy. The names and addresses of these people are:

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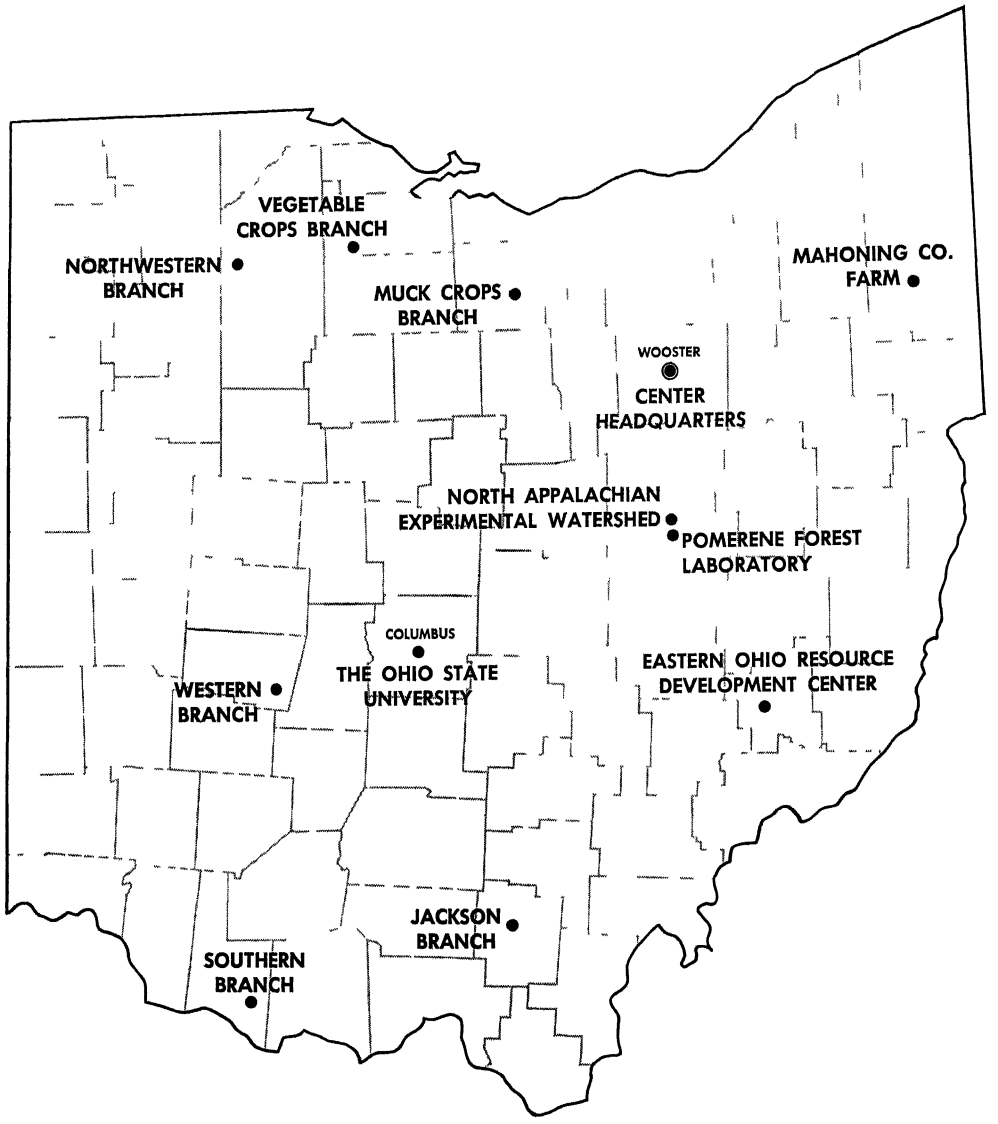

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